

VOL. XIII. NO. 5

1916

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## HORTICULTURAL ISSUE

THE PACKING OF APPLES IN NEW YORK STATE

By H. B. KNAPP

ORCHIDS, THE ROYAL FAMILY OF PLANTS

By DAVID LUMSDEN

HOW I HANDLE MY APPLE ORCHARD, By F. W. CORNWALL

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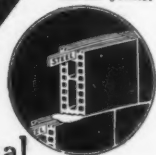


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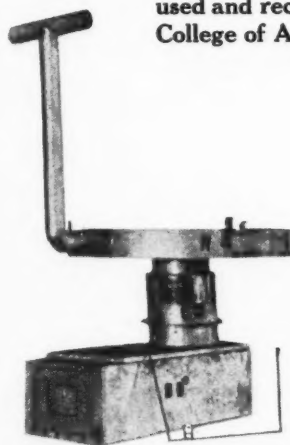
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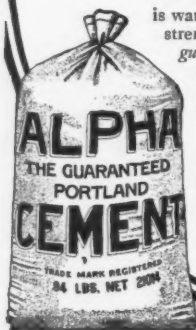
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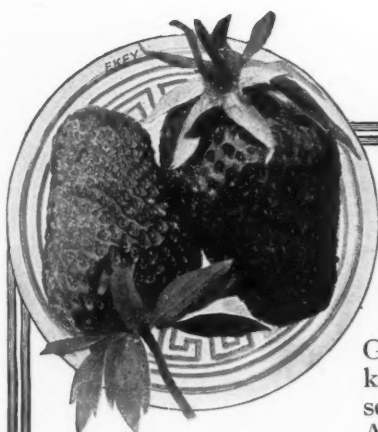
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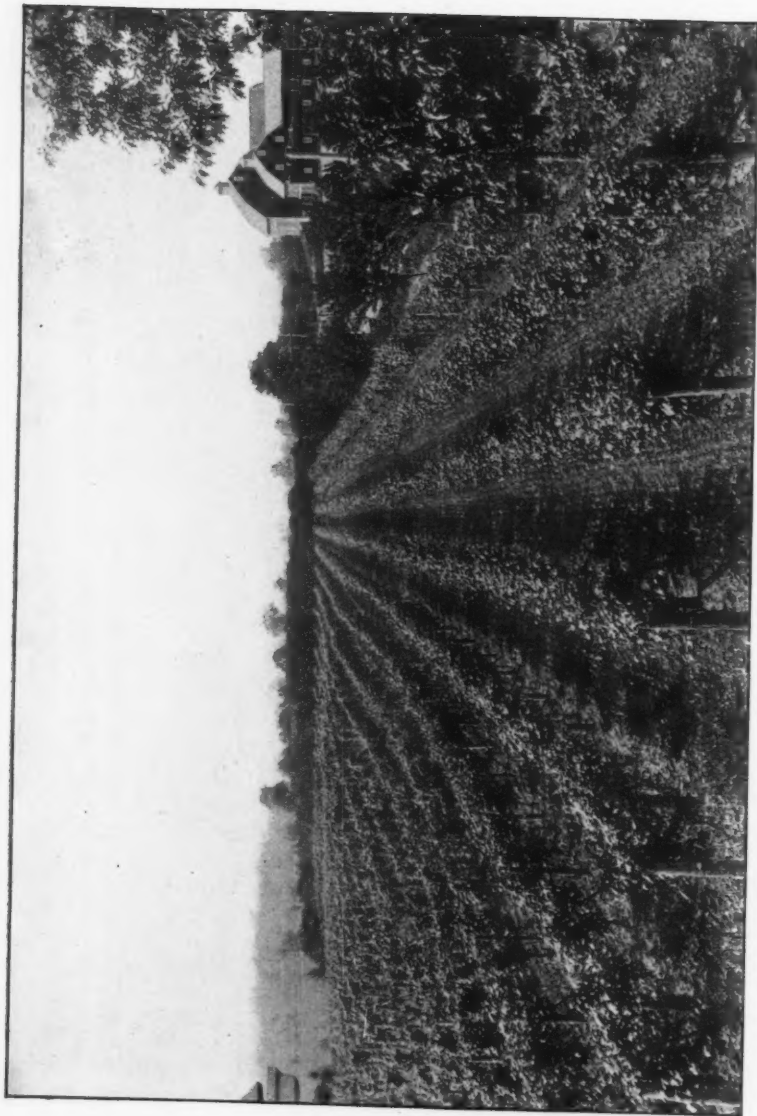
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AN IMPORTANT HORTICULTURAL INDUSTRY OF NEW YORK  
A typical vineyard in the Niagara district

# THE CORNELL COUNTRYMAN

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Vol. XIII

ITHACA, N. Y., FEBRUARY, 1916

No. 5

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## The Packing of Apples in New York State

BY H. B. KNAPP

Assistant Professor of Pomology, New York State College of Agriculture at  
Cornell University

Any changes that have been made in the methods of packing apples in New York State during the seasons of 1914-15 and 1915-16 have come about primarily through the operation of our compulsory packing law.

The need for such a measure has been discussed, and for the most part conceded, for many years. Only within recent years, however, has the marketing situation become so unsatisfactory as to make the passage of such a law of prime importance. With the increasing output of box apples from the North and from the West, and of barrel apples from the Piedmont section of the South, serious inroads on the domestic market have been made. Canadian fruit packed under the Fruit Marks Act and handled largely through central or community packing houses has grasped with disconcerting firmness the European apple trade. Under such conditions New York growers have realized that their hope for the future depends on their supplying an article in all respects the equal of that supplied by their competitors. This calls for a far greater degree of standardization of pack than New York fruit had formerly received, and as a result the New York Apple Grading and Branding Law was passed by the Legislature in its session of 1914, taking effect on July 1, 1914.

During the following season the mea-

sure was subjected to a severe test under conditions not altogether favorable. An unusual amount of late scab infection made the work of running the fruit more than ordinarily difficult and expensive. As was to be expected, some dissatisfaction was expressed with the provisions of the law and with the manner of its enforcement. This criticism was most severe in the general farming regions, where the orchard is only a minor part of the farm business. Many farmers in these sections did not or could not find the time to spray more than once or twice, and then not always at the proper stage of development. More important matters often claimed their attention at a time when the orchard was in need of care. This enforced neglect resulted in a grade of fruit inferior to that produced in the well-kept orchards of the highly specialized fruit sections. Under previous methods of marketing this fruit could be sold on the reputation of better fruit, because there were no standard grades nor standard methods of marking the barrels except within very wide limits. It was not plain to such growers that their problem was one of farm management, possibly involving a readjustment of their business, and that, while the law might hasten this change, it was bound to come eventually. There appears to be no good reason, however, why the

entire apple industry in the State should in the meantime be permitted to fall further into disrepute.

There was no question also that the grades under the law were in a few cases not sufficiently different and distinct. This fact, coupled with opposition from the sections mentioned, brought about certain alterations in the instrument. Among other changes, the measure was made a part of the Agricultural Law of the State, an act very essential to its proper enforcement. The amended law has been in operation during the present packing season. This year also a large amount of late infection of scab has complicated the situation, and it now appears that particular attention must be given to this problem, especially to the rapidity of development of scab on fruit in storage at different temperatures, before the question can be handled satisfactorily.

In general, results have been encouraging during both seasons. In 1914 the law tended to keep a large quantity of apples out of barrels, compelling their sale in bulk, with the result that the tone of the market was steadier and stronger than was deemed possible in face of the heavy crop. The Department of Pomology at Cornell received many letters of approval from growers and dealers. Apparently about eighty per cent of the growers are in favor of the measure, and practically all produce men in the market centers endorse it heartily. In one instance—that of the firm of E. P. Loomis & Co., of New York City—the Department received the following letter under date of November 15, 1915:

Yours of November 12th received. I thoroughly believe in the New York Apple Grading and Branding Law. Its effects were beneficial last year and were even more beneficial this year. I will give you one example:

At a time when the apple market in New York this fall was \$2.25 to \$2.50, we were able to quote out, to firms in Minnesota, offers on New York Standard

"A" Grade Baldwins, min. size 2½ inches, at \$2.75 i. o. b. shipping points New York. We received answering telegrams saying: "Do you guarantee pack and grade of apples according to the New York State Law?" and we wired "Yes." As a result of our being able to offer a certain definite grade and pack, we have been able to sell 70 carloads of apples and they were accepted and paid for without complaint. This was never possible under the old rule where every farmer packed his apples in a different way.

The State Commissioner of Agriculture recently sent a corps of men to the docks, terminals, warehouses, and stores in New York City to cover the market and note violations. Their reports show that eighty-five per cent of New York fruit in the city at that time was packed in accordance with the law.

Many obstacles are encountered in the enforcement of such a measure. The State Department of Agriculture, with which its enforcement rests, is hampered by lack of funds. It finds much ignorance on the part of the growers concerning the provisions of the law, even after two years of publicity work. One of the serious disadvantages of a state measure is that the State has no jurisdiction after the fruit leaves its boundaries. This makes it possible for unscrupulous growers and dealers to remove, change, or substitute marks on the barrels in other States, to the evident injury of the reputation of our fruit and of the respect in which the law is held. A federal statute is needed, covering the same general grounds.

The conviction is strong that the law has survived the experimental stage, and that, although changes will still need to be made, it has justified its enactment. If the experience of other similar sections may be taken as a guide, we may now look forward to the gradual establishment of community packing houses in which large quantities of fruit may be brought together under one label and in which the grower is not responsible for the packing of his own fruit.

# Orchids, The Royal Family of Plants

BY DAVID LUMSDEN

Assistant Professor of Floriculture, New York State College of Agriculture at  
Cornell University

The last half-century has seen many changes and developments in the horticultural world, but in none of its branches has more rapid progress been made than in the cultivation and hybridization of the orchid. The interest taken in orchids was never greater than at the present time, and each year additional greenhouse structures are being erected in various parts of the country for the sole purpose of cultivating these interesting, fascinating, and beautiful flowers.

Orchids hold one of the most important places in gardens, and such genera as *Cattleya*, *Laelia*, *Cypripedium*, *Dendrobium*, *Odontoglossum*, *Oncidium*, and *Phalaenopsis* are so popular that they are cultivated on a very extensive scale. These genera are grown not only by orchid enthusiasts in private collections, but also by amateurs and commercial growers. Commercial florists are importing and growing these plants by the tens of thousands, expressly for the trade in cut flowers. The reasons for this popularity and for their more extensive culture is attributable mainly to the exquisite beauty of the flowers of many of the species, their choiceness, and their adaptability to all artistic floral arrangements in the making up of bouquets for weddings and other occasions, for corsage bouquets, and for dinner-table and all other decorations where the choicest and most beautiful in flowers is desired. The value of orchids as cut flowers is greatly enhanced by their excellent keeping qualities; in many instances cut flowers of some of the species have remained in a state of perfection for more than three weeks, while those left on the plants have kept for a corresponding number of months.

The present lower cost of the plants in comparison to the prices paid in former years has also been an important factor in increasing their popularity.

Practically all the orchids cultivated under glass with the exception of hybrid forms, are imported from tropical or semi-tropical countries. The hybrids are the progeny resulting from the artificial crossing of genera species and varieties under cultivation in the greenhouses.

## Imported orchids

With present-day improved facilities of steamship transportation, species of orchids that were hard to import a few years ago are now received from their native habitats in large quantities with the reasonable assurance of their arriving in good condition. The probability of successful growth following transportation was more or less a matter of conjecture in earlier years. During the period that may be spoken of as the experimental stage in orchid importation, the collecting of plants was left almost solely in the hands of a few prominent nurserymen and horticulturists, who sent out travelers to the four corners of the world in search of new and choice plants. Prominent among these pioneer horticulturists, the name of Veitch has become immortalized. It is due to the patience, perseverance, and enthusiasm of the members of the firm of James Veitch & Sons, and its corps of able collectors, that we are indebted for the introduction of many choice and rare orchidaceous plants, as well as other plants that have become great in economic importance.

## Geographical distribution

Orchidaceous plants are widely distributed over most of the entire world, except in the coldest sections. The most important genera, broadly speaking, are confined between the thirtieth parallel of north latitude and the thirty-fifth parallel of south latitude, this broad zone including about three-sevenths of the land area of the globe. The genus *Cattleya* is found in the Colombia-Guiana region of South America, and both *Laelia* and

A FINE SPECI-  
MEN PLANT OF  
*CATTELYA*  
*MOSSIAE*



*Cattleya* are found in southern Brazil and in the western section of Mexico and Guatemala. The exotic *Cypripediums* and *Phalaenopsis* are largely confined to the Indo-Malayan region. The *Odontoglossums* are found in the Andean region of South America, in Mexico, and in Central America. Other genera are largely confined to the above-mentioned regions. Many genera and species of orchids are found also in North America, prominent among them being the lady's slipper, or *Cypripedium*, in its several varieties.

The orchids of the temperate region are chiefly terrestrial. They have fibrous roots, and often large, fleshy tubers, and derive their nutriment from the soil in which they grow. Those of warmer countries are epiphytal in nature. They are often incorrectly spoken of as parasitic, but they derive little or no nourishment directly from the host plant. An epiphyte merely uses the branch as a support or resting place, taking its food from the surrounding atmosphere, while a parasite obtains its nourishment from the host plant.

#### Morphology of orchid flowers

From a botanical standpoint the orchid furnishes varied and excellent material for study, as in structural formation the flowers differ entirely from those of other endogenous plants. It is in the floral structure that we find the features prominently characterizing the orchid. The eminent botanist Dr. Lindley, in the English *Cyclopedia on Orchidaceous Plants*, writes thus of their morphology:

"There is no order of plants the structure of whose flowers is so anomalous as regards the relation borne by the parts of reproduction, or so singular in respect to the form of the floral envelope. Unlike other endogenous plants, the calyx and corolla are not similar to each other in form, texture and color (as in the lily, crocus, narcissus, squill, amaryllis, etc.); neither have they any similitude to the changes of outline that are met with in such irregular flowers as are produced in other families of the vegetable kingdom. On the contrary, by an excessive development and singular conformation of one of the petals called the labellum or lip, by irregularities



either of form, size, or direction of the other sepals and petals, by the peculiar adhesion of those parts to each other, and by the occasional suppression of a portion of them, flowers are produced, so unusual and so grotesque in form that it is no longer with the vegetable kingdom that they can be compared but we are forced to seek resemblances in the animal world."

#### Mimicry in orchids

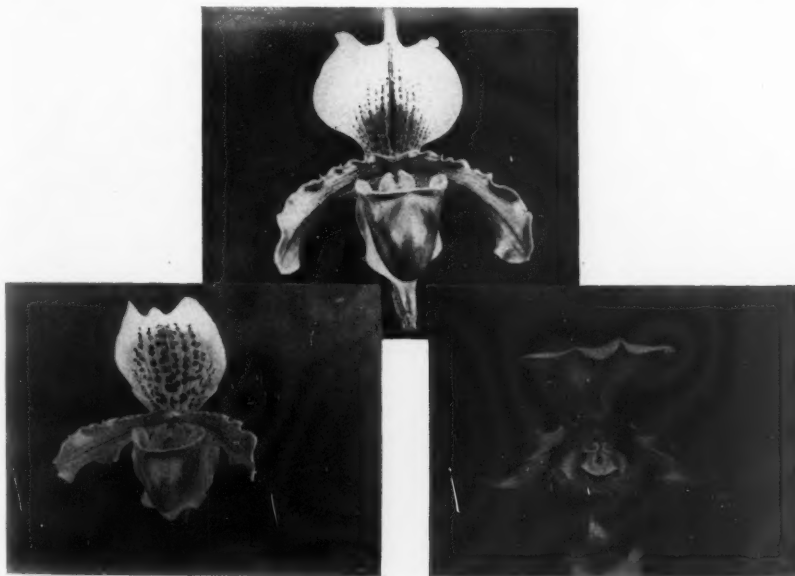
Many well-known instances of mimicry occur among the orchids, in particular those that are natives of Great Britain and the Tropics. Prominent among these are the bee orchis (*Ophrys apifera*), the fly orchis (*Ophrys muscifera*), the frog orchis (*Habenaria viridis*), the bird's-nest orchis (*Neottia nidus avis*), the butterfly orchid (*Oncidium papilio*), the dove orchid (*Peristeria elata*), the swan orchid (*Cynoches pentadactylon*), the moth orchid (*Phalaenopsis schilleriana*), and many others.

#### Fertilization

Not a whit less interesting than the mimicry just mentioned are the contrivances by which orchids are fertilized. Darwin says, "They are almost as perfect as any of the most beautiful adaptations in the animal kingdom."

Most orchid flowers are incapable of self-fertilization, owing to the position in which the reproductive organs are placed in the flower as well as to the nature and texture of the pollen (pollinia). In orchidaceous plants the pollen grains, in waxy masses, are united by excessively elastic thin threads; therefore we infer that they have for their main object the fertilization of each flower, not by its own pollen but by the pollen of another flower. This is accomplished through the agency of bees, moths, and other insects that are native in the sections of the world where the orchids abound.

The engrossing pursuit of raising or-



A HYBRID ORCHID "CYPRIPEDIUM LEEANUM" WITH ITS TWO PARENTS  
The Female Parent is on the Left, "Cypripedium Insigne," and the Male Parent on the Right, "Cypripedium Spicerianum." Note that the Hybrid is Intermediate in Form and in Color Between the Two Parents

chids from seeds had its genesis only a comparatively few years ago. The art was first introduced by the late J. Dominy, in the nurseries of James Veitch & Sons at Exeter, England. The suggestion was made to Mr. Dominy by Dr. Harris, a surgeon of Exeter, that it might be possible to artificially cross orchids and raise them from seed. Dr. Harris, being a botanist as well as a surgeon, explained to Mr. Dominy the reproductive organs of the flowers. Dominy lost no time in following Dr. Harris's suggestion, and commenced his experiments in 1852. It was in October of 1856 that the first hybrid, *Calanthe Dominii*, flowered. Mr. Dominy successfully carried on this work of hybridizing among the various tribes of orchidaceous plants for about twenty years. During that period he raised several meritorious hybrids, including the bigeneric orchid, *Laelio-Cattleya Dominianna*, a cross between two genera, *Cattleya* and *Laelia*. This hybrid flowered in 1878. Mr. Seden, who succeeded Mr. Dominy, raised and introduced many orchids of sterling merit. Other nurserymen, orchid enthusiasts, and gardeners in private establishments, both in America and in Europe, took up the work, and many beautiful and interesting orchids have been produced, including bigeneric and multigeneric hybrids.

As has been stated, one of the reasons for the more extensive cultivation of orchids is the length of time the flowers of most of the species continue in perfection after they open. It is now conceded that with few exceptions the duration of bloom is due to the flowers' never becoming fertilized unless by some external agency. The number of self-fertilizing orchids is infinitesimal when compared with the whole number of species contained in the family Orchidaceae. Darwin mentions ten species, and other botanists of later date have added a few more to this number.

In commenting on the self-fertilization of orchids, Darwin states: "Considering how precious the pollen of orchids evidently is and what care has

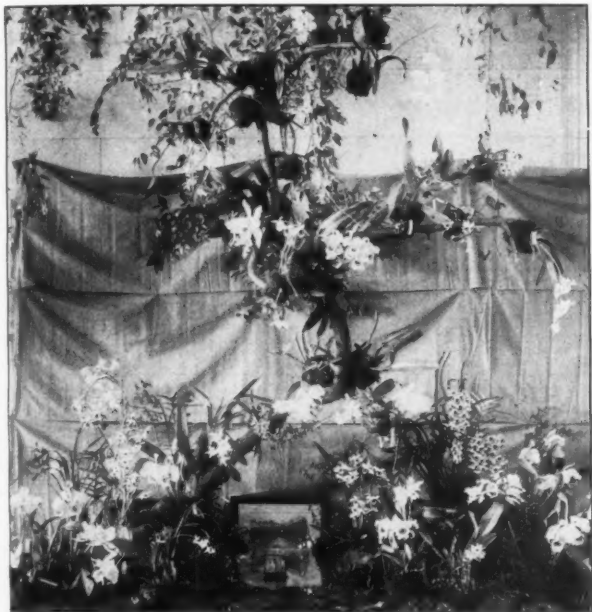
been bestowed on its organization and on the accessory parts; considering that the anther always stands close behind or above the stigma, self-fertilization would have been an incomparably safer process than the transportal of the pollen from flower to flower. It is an astonishing fact that self-fertilization should not have been a habitual occurrence. It apparently demonstrates to us that there must be something injurious in the process. Nature thus tells us in the most emphatic manner that she abhors perpetual self-fertilization."

A striking example of this extraordinary manner of fertilization and how it is accomplished is afforded in the genus *Coryanthes*. The scape bears from two to three large, curiously shaped flowers, which hang downward. The generic name, taken from *Korys*, a helmet, and *anthos*, a flower, alludes to the helmet-like appendage to the lip of the flower. The sepals, after opening, soon collapse and assume the attitude of bats' wings at rest. The lip is fleshy and solid, and the sepals and petals are delicate in texture. The lower part is converted into a large bucket, above which two horn-like appendages secrete so much nectar that into it. The total quantity of fluid secreted in the bucket is about one ounce. When the bucket is nearly full the fluid overflows by the spout. This spout is closely over-arched at the end of the column which bears the stigma and drops may be seen continually falling the pollen masses, in such a manner that an insect forcing its way out of the bucket through this passage would first rub its back against the stigma, or female part, and afterward against the viscid disks of the pollinia, or male parts, and thus remove them. This remarkable method of fertilization has been observed in plants growing in their native country (Tropical America). The bees, attracted either by the perfume of the flower—which is very powerful and agreeable—or by the nectar, approach the flower in large numbers and dispute with one another for a position on the edge of the bucket. Partly for the contest, and possibly be-

cause of the liquid's being somewhat of an intoxicant to bee life, the bees fall into the bucket and receive a drenching sufficient to prevent their immediate escape. Crawling around inside, they soon discover the opening of the spout and emerge therefrom. It is here that the pollen is removed by its adhering to the bee's back. As soon as the insect comes out he returns almost immediately to his feast. He is generally precipitated

fertilization of the flower absolutely depended on insects crawling out through this passage. If the bucket had been dry, the bees could have easily escaped by flying away." He argued therefore that the fluid is secreted by the horn-like appendages in such extraordinary quantity for the purpose of wetting the wings of the bees, and thus compelling them to crawl out through the passage.

One of the most interesting circum-



An exhibit of orchids at the International Flower Show in New York 1914. A branch of a tree is being used to illustrate how they are found growing in their native habitat.

(Courtesy of Lager & Hurrell, Summit, N. J.)

a second time into the bucket, passing through the same opening, and during that time the pollen masses adhering to the thorax or other parts of the bee's body are deposited on the stigmatic surface of the same or some other flower. It is stated by observers that sometimes there are so many of these bees assembled that there is a continual procession of them through the passage. Both Dr. Cruger and Dr. Darwin were much interested in this genus, and Darwin, in commenting on the *Coryanthes* in the *Botanical Review*, states that he thought "there could not be the least doubt that the

stances connected with artificial hybridization is the means it has afforded of tracing the life history of many of our orchids. It has also afforded the student in heredity excellent material for carrying on his work. It is very true that in the case of orchids several years must elapse from the sowing of the seed to the flowering of the plant. In some cases and with some genera the period of time has been about two years, while in other cases it has been twenty years. These long periods of time, however, are exceptions, and in general from three to six years would be considered an average

length of time in which to produce a flowering plant.

Injury to plants used for hybridization purposes has prejudiced some persons against the general practice of hybridization. There can be no denying the fact that the strain of fructification does considerable injury to the parent plants, and oftentimes it takes several years for these plants to recuperate. But owing to the vast depletion of some of the forests in which the orchid was once found abundantly, as well as to the cutting down of great numbers of trees by the ardent orchid collector, many thousands of small seedlings of orchids perish annually. This felling of trees by

the orchid collector often becomes necessary in order that he may obtain the plant for which he is seeking. In many cases the plants are situated high on the branches, and a luxuriant growth of vines attached to the trees forms a harbor in the tropical wilds for venomous insects and reptiles. This makes climbing the trees to obtain the plant extremely difficult and dangerous. Owing to the increasing popularity of the orchid and the demand for the cut flowers, it has become necessary for the florist to practice hybridization in the greenhouse on a far larger scale than formerly in order that the race of these royal plants may not be exterminated.

## The Purple Raspberry

BY R. D. ANTHONY

Associate Horticulturist, Geneva Experiment Station

The purple-cane, or purple-cap, raspberry was first called *Rubus neglectus* about 1869 by Peck, at that time New York State Botanist. As botanists became more familiar with these raspberries, the wide range in type which they showed and the fact that they were found only in limited numbers, and then in the presence of both the red raspberry and the blackcap, led many to surmise a hybrid origin. The possibility of hybridizing the blackcap and the red raspberry was soon proved and the similarity of such hybrids to *Rubus neglectus* strengthened these doubts as to the correctness of Peck's species. The production of hybrids seems not to have been done on a sufficient scale to give indisputable evidence as to the origin of the purple raspberries until a series of crosses\* had fruited at the State Experiment Station at Geneva, New York. This included over fifty pure seedlings of Columbian, a purple raspberry, and over eight hundred hybrids of the blackcap and the red raspberry. A study of these seedlings leaves no doubt of the hybrid origin of the purple raspberries.

The popularity of the purple raspberries has been increasing rapidly during the last ten years and in some regions they have largely supplanted the blackcaps. This has been due to their heavy production and their nearly complete immunity from anthracnose, which has been destroying the blackcaps. When we consider that but two varieties, Columbian and Shaffer, are responsible for this development, and that these are but chance seedlings, we realize what an opportunity there is here for the fruit breeder.

The study of purple raspberries which was started at Geneva in 1910 has now progressed far enough to enable us to draw a few conclusions, and promises to give us new varieties much superior to any now under cultivation.

The pure seedlings of Columbian fail to show the breaking up which we would expect in the F/2 generation (the second from the original crossing). Out of half a hundred, none could be described as a pure red raspberry, though several approached closely to the red raspberry both in color and in cane characters;

\* This work was started by Mr. Richard Wellington, at that time associate horticulturist of the station, and a preliminary report was made by him before the Society for Horticultural Science at Washington in November, 1913.

nor did any show a tendency to propagate by suckers as does the red raspberry, though some failed to tip readily. In cane color and glaucousness there was more of the expected splitting up, some seedlings having the deep purple-red canes of the Columbian while others had green canes, and some having a bloom such as is found on the base of Columbian canes while others were non-glaucous as in the supposed red grandparent.



**A SEEDLING PURPLE RASPBERRY**

Obtained by crossing a black cap and a red raspberry

In the crossed seedlings, June, a station seedling red raspberry, has been used as the male, and two different blackcaps, Cumberland and Smith No. 1, have been used as females. Practically every crossed seedling shows clear evidence of its hybrid origin. The Smith No. 1 seedlings were all purple, though the color showed varying degrees of intensity; but among the 289 Cumberland seedlings there were nine yellows that were intermediates in their bush type, and one that might readily have been

classed as a blackcap bush. None of the seedlings of either cross gave any indication of propagating by suckers.

An unusually large proportion of these crossed seedlings were very promising. The bushes were more vigorous than either parent and bore a heavy crop of large, firm fruit, somewhat later than the parents. Some were rather unattractive because of their dark color and dull look caused by a thick pubescence, but many were a rich, glossy purple.

For those wishing to breed purple raspberries, the best mode of procedure would seem to be to cross the most desirable reds and blacks rather than to attempt intercrossing among the purples or to grow pure seedlings of any purple sorts. For such persons the chances of reward are excellent, and as results can be obtained in from three to four years—a comparatively short time for the fruit breeder—this offers an attractive field.



# Relation of the Government to the Marketing Problem\*

BY BEVERLY T. GALLOWAY

Dean, New York State College of Agriculture at Cornell University

The marketing of farm products is an extremely complicated problem. Manufacturing involves the observance of certain fundamental rules and principles which may be formulated and shaped into a code of action. The production of crops from the soil is an art supported by science, and this art lends itself more or less to certain given principles and rules that may be catalogued and applied. Marketing, on the other hand, is empirical. There is no science, and as yet little system, to it. Hence the field for its development is open.

In this paper we are concerned only with the marketing of farm products, which is even more complicated than the marketing of manufactured materials. To obtain a proper conception of what might be the Government's relation to this problem in the future, we must look back and view what has been the Government's attitude on similar matters in the past.

Our people are worshippers of the fetish of independence—the right of every man to go his own way, mind his own business, conduct his own affairs, and let the body politic take care of itself as best it may. About the last thing that comes into the mind of the average citizen is the thought that what is good for the hive is good for the bee. The usual concept is to take care of the bee first; the hive can take care of itself. The reflection of this spirit is seen everywhere: in our scheme of education with its hundreds and thousands of little independent units, at once the most wasteful, illogical, and inefficient, perhaps, in the world; in our whole system of land settlement and land allotment, whereby the dweller has been

compelled to isolate himself and make his way without opportunity or hope of community life; in the organization and development of legislative bodies, the members of which are expected first of all to look after the interest of the particular ward, county, district, or State they may represent, and as a secondary consideration to look after the welfare of the country as a whole. This condition of affairs is not limited to the United States alone. It is more or less prevalent in the whole of the Western Hemisphere, and is in part due to the fact that heretofore there has been plenty of room for expansion and expression. We are now beginning to crowd one another. We can no longer move about as freely as formerly, and we are feeling the need of combined effort and collective effort in solving the new problems that are rapidly arising.

To further complicate matters, we find the farmer, the man who produces so much of the material to be sold, not long removed from a period when the farm was self-contained. In a good many sections the farmer can still manage to live fairly well on what he produces at home and on what he can sell and barter near by. It is beginning to dawn on him, however, that with all the rapid economic changes he is more and more being brought into competition with the world, and that as an individual he is unable to cope with the situation. In his bewilderment he appeals to the State, with the result that there is much scurrying and scuttling here and there, and innumerable bills for relief are introduced, which seldom accomplish anything except, perhaps, to secure a few votes for the introducer. This procedure may continue indefinitely until

\* Presented at the Second Pan-American Scientific Congress, held at Washington, D. C., December 27, 1915, to January 8, 1916, under Section III, Conservation of Natural Resources, Agriculture, Irrigation, and Forestry.

out of it there is gradually developed some plan or policy that will be far-reaching and permanent in its effects. This is economic evolution in a democracy—a tremendously wasteful and costly proceeding, but in the end occasionally successful.

It took nearly half a century, at a cost that no one can tell, to evolve a system of currency which from its very simplicity one is amazed to find was so long in coming. It seems fairly reasonable, therefore, to surmise that in the marketing of farm products and the Government's relation thereto, we must look forward to a considerable period of shifting and changing and more or less uncertainty while education is doing its work, until, through one means or another, the people are brought to think and to act in terms of community effort. For the marketing problem now and in the future is a community problem, which means that any country founded on the tenets of a democracy must first heed the great call for educational effort, in order to bring all the people to a realization and understanding of the need, the important need, of working together.

We would, therefore, put down as a first step of Government in the marketing problem, the development of a definite policy in educational work looking toward what may be called social preparedness. This is a legitimate problem for the state, which all of us who have the highest ideals of a democracy at heart can thoroughly approve. To educate for social preparedness, to develop from within the desire and the spirit to work together rather than have to be forced to work together, is certainly worthy of our best effort. We now have the opportunity of studying something of the workings of these two methods in the deplorable conflict that is shaking civilization everywhere. What the end will be we do not know. I think many of us, however, are ready to admit that some of our theories as to the powers and influence of a representative democracy will have to be revised.

That the people are awake to the needs of the matter is evidenced by the demands for help and light. Good beginnings have already been made, and it is gratifying that our own Department of Agriculture is taking the lead in this work. Through its Office of Markets and Rural Organization and its States Relations Service, lines of work are being developed that will lead to far-reaching results in establishing safe and sane principles.

This work offers a great field for our agricultural colleges. It must be developed, however, through a new form of teaching and a new kind of teacher—a form of teaching that is concerned less with academic theories and more with the real everyday affairs of life, and a new kind of teacher who knows *life* and its problems rather than books and the problems they present; a form of teaching and a kind of teacher that will bring about "a wise and just evolution of our social and industrial problems, the union of clashing elements in our population, the adjustment of differences, the wiping out of bitterness, the establishment all through our social and industrial life of a justice so patent that none but the unjust can doubt it." These things cannot be accomplished by government fiat, but the Government can lend its aid by liberally supporting all properly organized educational agencies engaged in the work.

As we come to view this type of effort at close range, it becomes more and more evident that it must be based on a systematic study of the real facts of working together, rather than the theories of collective effort. For a time at least we shall need to be concerned more with the facts as to what has been done, than with the theories of what might be done. There is a vast fund of fact that could be made immediately usable if it were properly brought together, sifted, assimilated, and put into teachable form. All the issues are now very much confused by the action and operation of many types of so-called cooperative or collective agencies whose

primary object is pecuniary gain for the few rather than the establishment of fair and just relationships and mutual helpfulness for all. It will require a decade of active educational work to bring about a proper understanding of some of these matters and to bring our people to the state of mind necessary to enable us to proceed with broader and better constructive plans. Nothing will accomplish so much as the mere bringing of the people together to discuss the questions at issue under agencies that will guide and not attempt to direct. Already the Government of the United States is laying the foundation for future work of this nature through the organization of a broad scheme of extension work, localized in counties but guided by a comprehensive scheme of cooperation through the colleges of agriculture in the respective States. I refer to the cooperative work of the Federal Government with the state colleges in the conduct of the county agents' activities.

Briefly, then, one of the first functions of Government in relation to the marketing problem is to develop, through properly organized educational work, a state of mind, a real knowledge of the broader questions and issues, and a true understanding and appreciation of the social, moral, ethical, and business questions involved. The state, and the state only, can do this, but up to this time the state has done but little, and it must be admitted that as yet we are all groping as to the method that should be employed in developing social consciousness.

A second and vital function of Government in relation to the marketing problem has to do with the securing of uniform legislation affecting legitimate organized effort in the field of marketing farm produce. We can sweep aside at once all those proposed forms of legislation that aim to do the things for the producer that he ought to do for himself. There should be no place anywhere in all these matters for development of anything like class legisla-

tion. The farmer does not need, and should not be regarded as needing, special privileges from the Government. There may be times when this appears to be the case, and our dangers lie in the direction of misconceived action in the belief that the difficulties can be met and overcome by government fiat rather than by the observance of economic laws. We do most sorely need, however, uniform constructive legislation that will establish and maintain the principles of justice between the producer and the consumer.

Here again we are confronted, in this country at least, with another fetish that has blocked progress for fifty years, and this is the fetish that holds that in vital matters affecting *all* the people *all* the time, we must recognize certain arbitrary and more or less meaningless boundary lines and provide for the people within these lines as if they were beings apart from all the other people. This policy, based on conditions which as a nation we have long since outgrown, has had more to do with holding back progress in some of the larger questions concerning the welfare of our people than almost any other one thing. View the situation with reference to protecting the life and health of all the people. Surely this is not a local question to be met by setting up certain health laws in one place and very different ones in another place. Pure food is pure food wherever found. Food cannot be pure and wholesome in Maryland and Virginia and the opposite in the District of Columbia. The distressing blight of child labor, which certainly concerns the Nation as a whole, we cannot check nor mitigate until there is some assurance of legislative uniformity throughout the entire land. If there cannot be uniformity of legislation which will guarantee to the producers of the necessities of life a fair share of the profit therefrom, or at least a living wage, then democracy is a failure and some other form of government must be devised. It would seem, there-

(Continued on page 398)

# Influence of Low Temperature on Fruit Growing in New York State

BY W. H. CHANDLER

Professor of Research in Pomology, New York State College of Agriculture  
at Cornell University

The climate of several sections of New York State is unusually favorable for the growing of nearly all temperate zone fruits, not only because the influence of the lakes makes the extremely low winter temperatures which kill the wood or the buds very uncommon, but also because the long, steady winters, with very few days that are warm enough to start growth, tend to keep the tissue dormant until danger from severe spring freezes is past. Further, this long period of cold weather brings the tree through its necessary period of dormancy with a large store of plant food to start it into a vigorous growth in the spring. If there were many warm, sunny days in winter, such as there would be at some distance farther south, much of this stored plant food would be exhausted. For this and other reasons, fruit trees make a more vigorous growth, and perhaps live longer, in New York than farther south.

In another way, the climate of New York is fortunate for growing certain kinds of fruit. In the case of peaches, the section in which this fruit can be grown with safety is along the Great Lakes, where the climate is mitigated by the large bodies of water. Since these areas are very limited, there is much less likelihood that too many peach trees will be planted and the market over-supplied than in such sections as those farther south, in Georgia for example, where very large areas are available and there is generally great over-planting. For this reason, peach growing along the Great Lakes has been a much more stable and uniformly prosperous industry than in most other sections where peaches are grown.

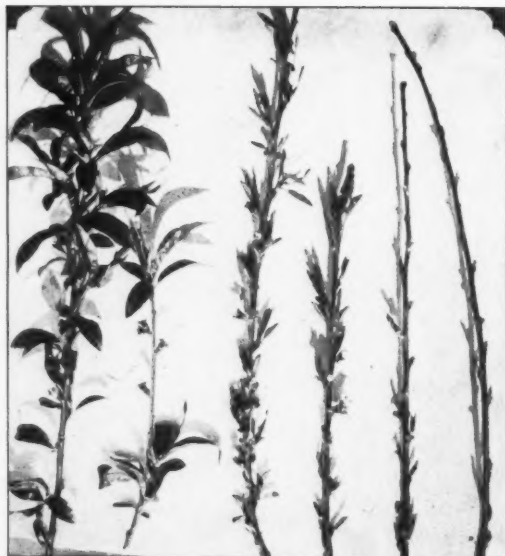
It is the purpose of this paper, however, to discuss the losses that fruit

growers suffer due to low temperatures in New York State. Perhaps it may be well to make clear, so far as we are able, how plant tissue is killed by low temperature. It is not possible to say with certainty what happens, but we know that the injury is associated with ice formation in the tissue. It is sometimes possible to lower the temperature below that at which a tissue normally kills without having ice form—that is, to supercool the tissue. After such supercooling, if the tissue can be warmed to above the freezing point without ice formation, no injury results; but if ice forms, serious killing may result at the same temperature. As a rule, the ice forms in the spaces between the plant cells, the water being drawn out of the cells. It is rather common for writers to make the statement that if the thawing is slow enough so that the water is taken back into the cells gradually, as it thaws, injury is not likely to result. This, however, is not true. In the case of most tissues the amount of injury is not influenced by the rate of thawing. In fact, the death of the tissue may be proved before thawing occurs. Yet in the case of ripe apples and ripe pears, generally, unless the temperature goes too low, the amount of injury may be reduced by permitting the fruit to thaw very slowly without being handled while it is frozen. It does not reduce the injury to thaw the fruit in cold water, since this is not a method of slow thawing but is in reality a method of very rapid thawing.

In the case of dormant tissue that requires a winter temperature to kill it, the rate at which the temperature falls has a marked influence on the amount of killing at a given low temperature. It is possible to kill almost any tissue

#### WINTER INJURY TO PEACH BUDS

The two peach twigs on the left were taken from normal peach trees on May 29, 1915. The four on the right were taken from trees that showed abnormally late opening of leaf and fruit buds. This late opening was caused by winter injury to the tissue at the base of the buds.



in a tree at a temperature that is reached in many winters, by lowering the temperature much more rapidly than it would fall under normal conditions. This fact seems to have some practical importance. In most years, if the winter temperature reaches  $-15^{\circ}$  F., the fruit buds of peach trees will all be killed; yet in some years a crop may be obtained after the temperature has been at  $-20^{\circ}$  F., or lower. So far as I have been able to learn, in all cases in which the buds have withstood such low temperatures there has been a long period of cold weather preceding the time when the temperature fell low enough to kill, and thus the rate of temperature fall was rather slow.

With regard to the wood of the trees, the most important factor in determining the amount of injury is maturity. In the early summer, when the trees are growing rapidly, almost any of the tissues will be killed by a temperature but a few degrees below freezing. Later in the summer a lower temperature is required to kill the tissue. This increased hardiness continues even after the leaves have fallen, and therefore

the tissue is generally more tender in late November or early December than it would be in January. If the tree grows very late, the tissue will be more tender, throughout the early part of the winter at least, than if it had ceased growing rather early. In the case of a young tree that has grown late, the more tender tissue is that at the end of the twigs, and so on such trees there may be killing back from the ends. This is very common with peaches and apricots. When the trees have become old enough to bear, or nearly so, generally the last tissue to become hardy seems to be that near the base of the tree; hence it is not uncommon to see areas killed just above the surface of the soil or at the union of a vigorous branch with the trunk of the tree. These injuries are often spoken of as *crown rot* and *crotch injury*, respectively. Of course dead areas at such points may result from other causes than winter injury. This form of injury is often found on the Tompkins King variety of apples, and it has been observed recently that even the Northern Spy is not free from it in colder parts of the State. McIn-



tosh, Fameuse, and Oldenburg are some of the varieties in which this form of injury is less common. Crown rot due to this cause is very common also with young peach trees, even in sections where the climate is reasonably favorable.

In New York, because of the short growing season, this lack of maturity is the most important cause of winter injury to the wood. There may be no relation between the minimum temperature observed in winter and the amount of winter injury that will result. The most serious winter injury may result from winters when the temperature has never been more than a few degrees below zero Fahrenheit. Therefore, in any New York fruit-growing section where winter injury has been observed to a considerable extent, it is exceedingly important that the trees should be handled in such a manner as to make certain that the wood will go into the

winter in a mature condition. This does not necessarily mean that the trees should be kept in a weak condition. In a poor soil that is unretentive of moisture, trees having a weak early summer growth may be less mature when winter comes than they would have been if they had made a vigorous early growth. In the past summer I had occasion to examine an orchard that was not cultivated during the summer of 1914, in which there had nevertheless been very severe winter injury during the following winter. The explanation for this seems to be that because of very weak early growth in the summer of 1914, the trees were started into a slight growth by the rainy weather of August; while if they had made a vigorous early growth they would have had a large leaf surface to evaporate the excess water, and furthermore they would not have been through any period of partial dormancy but would instead have been just entering



**PEACH TREE SHOW-  
ING RESULTS OF  
WINTER INJURY**

Note that the buds opened very late on the young twigs at the top of the tree while on the older twigs toward the base of the tree they have started normally. These older twigs perhaps matured their wood earlier in the fall of 1914



**NORMAL KIEFFER PEAR TREE**

Taken June 12, 1915 in the orchard of Mr. E. E. Morrell, Kinderhook, N. Y.

the dormant period—a time when it is very difficult to force new growth. It is therefore very improbable that they would have made any late growth had they made a vigorous early growth. The better cultivated orchards did not show this injury.

So far as cultivation is concerned, then, it seems that the best way to make certain that the trees will go into the winter in a mature condition is to begin cultivation very early in the spring, so that vigorous growth will begin early, and then cease cultivation and sow a cover crop earlier than is the common practice, say sometime in July. The early growth insures a large leaf sur-

face which will evaporate large quantities of water, and the early sowing of the cover crop reduces the water supply. Thus the tree is encouraged to cease length growth and acquire maturity. If cultivation is begun later, the tree is likely to start a vigorous growth later and to continue it later.

To some extent the same is true in regard to the use of a fertilizer containing nitrogen. If manure is plowed under late in the season, the increased growth due to its application may begin and end too late in the season. In the case of young peach trees, I am of the opinion that wherever winter injury is observed it would be wise to get increased vigor by the use of nitrate of soda rather than of manure, since one can be sure that the increased vigor from the nitrate of soda will result early in the season and that the nitrate of soda will be gone from the soil before the end of the season. The nitrogen in manure is not so readily available early in the season, and therefore the increased vigor might begin so late that the wood might not become mature. Very heavy pruning of young peach trees seems unwise, since this treatment forces them to grow too late in the season. In the case of peach trees that are bearing, however, this does not seem to be true.

#### **Killing of the Fruit Buds**

In the case of apples, pears, sour cherries, and most varieties of plums, the killing of the fruit buds is of so little importance that it may be ignored here. In the case of peaches, apricots, Japanese plums, and sweet cherries, however, it is not uncommon to have the flower parts of buds killed during the winter. The killing temperature for peach fruit buds when they are fully dormant varies from  $-10^{\circ}$  to  $-25^{\circ}$  F., depending on the weather that has preceded the freeze. Fortunately, most of the peach trees in New York are planted in sections where such low temperatures are very uncommon. Generally the flower parts of the fruit bud are the first to be killed.

**Killing of Flowers and Young Fruit**

In most fruit sections it is probably true that a fruit crop is more frequently lost from the killing of the flowers or the young fruit than from the killing of the buds in winter. It is impossible to fix on a temperature at which the flowers will be killed. In the case of peaches, this killing temperature may vary from 22° to 27° F. The longer the bloom has been open, the more easily it will be killed, and the young fruits are more easily killed than are the flowers. Apple flowers generally may be killed at a higher temperature than peach flowers. The reason why peaches are more frequently killed is because they open earlier in the season, when there is still more liability of a freeze. Apricots are seldom grown in this section, but not because the trees are less hardy than peach trees nor because the fruit buds are more easily killed. The fruit buds of apricots are in fact slightly more hardy than the fruit buds of peaches, but their habit of blooming very early, before danger of late frosts is past, makes the crops uncertain. Loss of crops from late freezing is much less common in New York than in sections farther west, such as the fruit sections of the Mississippi Valley, or in sections farther south.

In case of some very valuable fruits, such as the orange, it has been found profitable to heat the orchard during cold nights in order to prevent loss of fruit and, in the case of oranges, also to prevent injury to the trees. The same method has been used in some sections with apples, peaches, and other deciduous fruits. I do not believe, however, that we are as yet in a position to say that it has been used with profit. To equip for heating would require an initial investment of about two thousand dollars on forty acres. When interest on this investment, and depreciation on heaters and other equipment, are added to the annual labor expenses, the annual cost of being prepared to save the fruit crop will amount to about ten dollars per acre. So far as ex-

perience indicates, it is highly improbable that in any good fruit section of this State one crop in ten years would be saved by heating. I am therefore of the opinion that orchard heating would not be profitable in New York State.



**PEAR TREE SHOWING WINTER INJURY**

Kieffer Pear tree in the Morrell orchard. Taken June 12th, showing retarded growth resulting from winter injury to the spurs. Much injury was found in this orchard following the winter of 1914-15. If the orchard had been cultivated very early in the season of 1914, it is probable that it would have been in a condition of greater maturity at the beginning of winter and that this winter injury would have been avoided.

## How I Handle My Apple Orchard

BY F. W. CORNWALL, Pultneyville



### AN EFFICIENT COMBINATION

This team of mules has covered twenty-two acres of orchard in a ten-hour day

Forty years ago the orchard here discussed was set out on the home farm by my father. He selected a  $5\frac{1}{2}$ -acre lot about half a mile back from the lake shore; the soil was a light sandy and gravelly loam, the general slope was toward the north, and the drainage was good. Baldwin and Rhode Island Greening trees were planted 40 feet apart, in rows running north and south. For twenty-five years after planting, this orchard was neglected. Crops of corn, oats, wheat, and hay in rotation were raised between the trees. Little trimming and no spraying was done.

About twelve years ago we started in earnest to reclaim the orchard. The trees had grown so high that ladders twenty-four feet long were necessary for picking the fruit. The trees had to be gradually worked down, and we are now picking all the fruit from ladders eighteen feet long. The trimming is done every year, during December and

on through the winter, beginning just as soon as the apples are harvested and the corn is husked. This practice has been followed for several years with no detriment to the trees and with a great saving of time in the spring. The trees are well opened up in the center, to allow the sunlight to get in. They are kept thin and the tops are kept down. The brush is gathered and burned, leaving the land clear for a very early plowing in the spring.

In the spring the cover crop is turned under just as soon as it is possible to get on the land, care being taken not to plow deeply enough to cut off the small roots. This is followed immediately by harrowing. Then orchard cultivators are sent over the land after every rain or about once a week up to the middle of June or the first of July. The team of mules shown in the photograph has covered twenty-two acres in a day of ten hours.

Not earlier than the middle of June nor much later than the first of July, the cover crop is sown. We like best a mixture of 7 pounds of mammoth clover and 15 pounds of winter vetch to the acre. When it is impossible to obtain the vetch, the mammoth clover is used alone at the rate of 11 pounds to the acre. Inasmuch as we have found vetch seed expensive and difficult to procure, we are now raising our own.

For fertilizer, bone meal and potash, 4 to 1, or acid phosphate and potash, 4 to 1, have been used at the rate of from 20 to 30 pounds to a tree, depending on its size. At the present writing, potash is out of the question. Stable manure has been applied once in three years. Formerly the fertilizer was applied early in the spring around the trees, and plowed under. Now it is sown broadcast and harrowed in over the entire orchard a few days before the cover crop is sown. Applied at this time it cannot be called a direct fertilizer for the tree, but is put on for the immediate purpose of raising a cover. Thus it indirectly benefits the tree. I believe this to be the more effective of the two methods.

But there came a time when we were unable to get a catch of clover. We resorted to buckwheat and rye, which made a thick cover, but there was a question as to how beneficial it was to the orchard. We then decided to try lime. Five years ago we put on about 700 pounds to the acre, and since that time we have succeeded in getting a good stand of clover and vetch. The lime is sown early in the spring, following the plowing.

Of all the important operations in fruit growing—and each one seems important—none is more so than sane and thorough spraying. We usually spray three times only, unless there is a special reason for a fourth application. But if sufficient care is taken this fourth is not usually needed. Our three sprayings are as follows: First, the dormant spray; this is applied just as the tips of the buds begin to show green and

the aphids begin to hatch; lime-sulphur is used at dormant strength, 1 to 8, with  $\frac{3}{4}$  pint of black-leaf-40 to 100 gallons of the solution; we spray both sides of the tree with the wind, using a power sprayer and a rather coarse driving spray for contact; a strong wind is very desirable. Second, just as the blossom clusters separate and before they begin to open; lime sulphur at summer strength, 1 to 40, with 2 pounds of arsenate of lead to 50 gallons of the solution, is applied. Third, just after the petals fall; lime-sulphur, 1 to 40, with  $2\frac{1}{2}$  pounds of arsenate of lead to 100 gallons of the solution, is applied.

In cold, wet seasons we have in some cases sprayed a fourth time, about two weeks after the third spraying.

Thinning comes after the July drop, and the fruit is thinned from 4 to 6 inches. This has a very important effect on the bearing of the orchard.



PICKING APPLES

"An apple in the hand is worth five on the ground"



The picking is done by the day and not by the bushel. The men use three-peck splint baskets instead of bags, and we try to have them take great care not to drop the fruit, for an apple in the hand is worth four or five on the ground. Drops and windfalls, which bring only from ten to thirty cents a bushel, go to the evaporator and are grown at a loss. The good apples are taken in the baskets to the packing house, where they are graded and barreled. Most of them are packed and put in storage the day they are picked.

In the last four years—and in this orchard there is a crop every year—4248 barrels of apples have been picked,

80 per cent of which were No. 1 grade. The lowest price for the No. 1 apples has been \$3.25, and the highest \$7, a barrel. The price for No. 2 fruit has been from \$1.75 to \$5. Gross sales for the four years amount to \$17,416. Total expenses, including cost of production (which we figure at \$1.73 per barrel), storage, transportation, and commissions, amount to \$11,257. The net profit for the four years comes to approximately \$280 per acre.

But there are other orchards on the farm where the returns are not so good. We are using the same methods on them but have not succeeded in growing a crop every year.



#### THE ROCHESTER STAGE

	<b>B. W. Kinne</b>	<b>Leslie Brown</b>	
<b>E. R. Forthoffer</b>		<b>Miss Anna Bristol</b>	<b>S. H. Palmer</b>
(Winner)		(Second)	

These five students competed at the annual meeting of the New York State Fruit Growers' Association for the sixty-five dollar prize offered by the association. All the speakers are now taking work in pomology, or have taken courses in the department. This is the fifth competition of the kind which has been held.

The speeches, all of which pertained to fruit growing, were entirely original. The work of these students exemplifies the nature of the work carried on at the College, the idea being not only to impart information to students, but also to enable them to present such information in an effective manner. Of the sixty-five dollar prize the winner received \$35 and the second contestant \$15. Leslie Brown and B. W. Kinne tied for third place, each receiving \$7.50. S. H. Palmer did not compete.

## Student Labor

BY E. R. FORTHOFFER, '16

This speech was awarded first prize at the convention of the New York State Fruit Growers' Association held in Rochester January 7.—Ed.

The purpose of my talk to-night is to tell you something about student labor. I want to explain what student labor is, to correct any mistaken ideas that you may have regarding student labor, and to try to bring about a clearer understanding of the relationship that should exist between the student and the farmer or the fruit grower.

First, I must state that there are many students from many colleges seeking summer employment. What I have to say to-night refers not to these students as a whole, but only to the students going out from the New York State College of Agriculture.

The College of Agriculture at Cornell has had a phenomenal growth. In each of the past few years there has been an increase in registration of approximately two hundred students, until at the present time there are more than sixteen hundred students enrolled. Many of these students are from cities and know little or nothing of farming. The College therefore requires, and rightly, that each student shall have a certain amount of practical experience, the idea being to turn out men with a broad scientific training but with a foundation of good, practical experience. Now the College may place requirements on the student for graduation, but it must show the student the means of obtaining these requirements. Scholastic learning is required, and the College has a corps of professors and instructors, it has laboratories and lecture rooms, and all the equipment that is necessary to give the student a technical education. It is manifestly impossible, however, on the university farm to give sixteen hundred students, or even one-tenth that number, the practical experience they should have. For this reason the College must look to the farmers of the State to take these students on their farms and give them the practical experience that they need in order to become successful farmers.

The general impression has been that student labor is unsatisfactory. Without a doubt you have all heard that old, old story of the man who went into the orchard to trim, and, getting out on a dead limb of an apple tree, sawed it off between himself and the trunk of the tree. It would not be surprising if the present-day version of the story had this hired man a Cornell student.

Last summer a student went into Seneca County to work on a farm. The farmer had a field of barley in which there were a number of patches of yellow mustard, and, thinking it would be a good idea to prevent this from seeding, he told the student to go back into the field and take out the mustard. About two hours later the farmer thought he would see how the work was progressing, and, much to his surprise and astonishment, he found the student had been weeding the barley from the mustard. Anthony said, at the funeral of Caesar, "The evil that men do lives after them, the good is oft interred with their bones." The evil reputation for student labor which that student established in that community will remain for the next ten years, while any good service he may have rendered was no doubt never mentioned.

The College now feels that it can say with certainty that student labor is satisfactory. Professor King, who is the first vice-president of this organization, has been in charge of farm practice and student labor, and obtained employment for a large number of students last summer. He kept in close contact with the farmers hiring student labor, and at the end of the summer they reported on their opinion of the plan. Of one hundred and fifty students, one hundred and thirty-five, or ninety per cent, had given satisfaction, and the farmers who hired these students expressed the willingness to hire them again next summer. Only one man in ten, therefore, had

(Continued on page 412)

# How Types of Farming in New York State are Determined\*

BY K. C. LIVERMORE

Professor of Farm Management, New York State College of Agriculture at  
Cornell University

## Beans

Nearly three generations of farmers have grown beans on a commercial scale in New York State. The extremely high prices paid for beans during the Civil War resulted in a great increase in the acreage grown, and probably resulted also in thorough trial of the crop in different sections. The old-time expression "too poor to grow white beans," referring to soils, seems to suggest that beans may be grown almost anywhere. This may be true, but the experience of preceding generations of farmers, as summarized

If this condition results from practices based on experience, rather than from custom or chance, it must be explainable.

The first observation that helps to explain, is that the normal rain fall for these counties for the months from April to August inclusive is from 14 to 16 inches in nearly every case. This is shown in Table 1. In Wyoming County the rainfall is from 14 to 18 inches, and in Schuyler County, the last on the list, it is from 16 to 18 inches. A glance at a chart of the normal rainfall for these months shows this bean section

Table 1  
COUNTIES WITH THE HIGHEST PROPORTION OF THE CROP AREA IN  
DRY BEANS, 1909

Counties	Percent of crop area in beans, 1909	Normal rainfall where grown, April to August, inclusive (inches)	Normal length in days of growing season where grown
Orleans	13.6	14-16	155-165
Livingston	9.7	14-16	150-165
Genesee	9.4	14-16	145-155
Monroe	6.5	14-16	160-175
Wyoming	6.5	14-18	135-145
Yates	5.4	14-16	160-165
Ontario	4.2	14-16	160-170
Niagara	2.4	12-16	155-165
Wayne	2.3	14-16	165-175
Seneca	1.9	14-16	155-165
Schuyler	1.5	16-18	155-160

in present practices, indicate that in general bean growing adds to the farmer's profits in only one part of the State.

Practically all of New York's beans—94 per cent of the acreage in 1909, to be exact—are grown in eleven counties grouped compactly in the northern half of western New York, as shown in Chart I. No other county had as much as 1 per cent of its crop area in beans.

keeping just within the 16-inch rainfall line except in the two counties just mentioned. Evidently more than 16 inches of rain in the growing season is detrimental to beans. This checks with the opinions of growers. A comparatively dry season is preferred because anthracnose (the most injurious disease of beans) and blight are much less active in such a season, because snails are less

\* This is a continuation of the fifth article in a series dealing with the Agriculture of New York.

numerable, and because it is much easier to dry the crop preparatory to storing or threshing it. The harvesting cost may be doubled by a wet season, and there is likely to be considerable loss by discoloration or rotting.

Erie and Jefferson Counties are the only ones, aside from those listed in the table, that grow more than enough beans for the use of their own farmers. In both these counties the crop is grown where the rainfall is under 16 inches in the growing season.

importance. Like other leguminous plants, beans are partial to soils well supplied with lime. As described in preceding articles in this series, the soils of these bean-growing counties, in general, are well supplied with lime and are also deep. This applies to the soils on which beans are grown in Erie and Jefferson Counties. There is much limestone soil in Jefferson, St. Lawrence, and Clinton Counties, but most of it is too stony for cultivation or is too shallow or wet for any crops except hay, oats, and

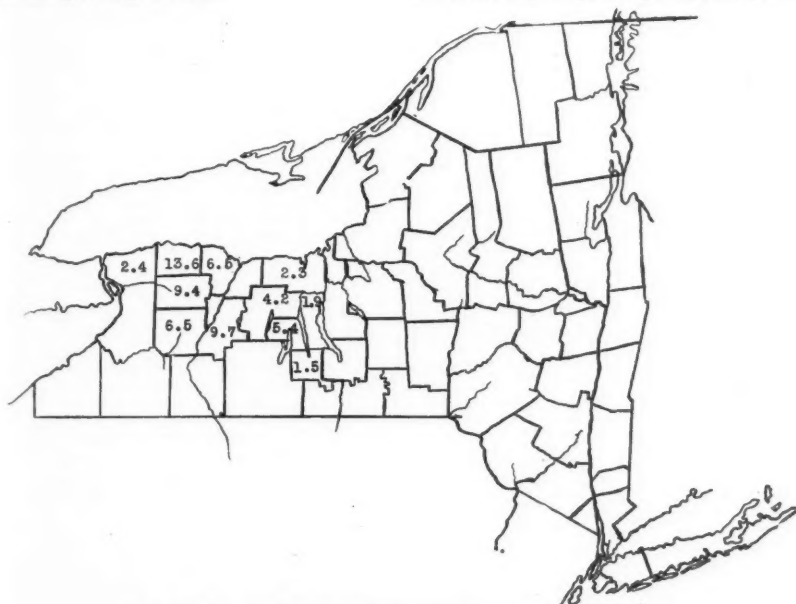


CHART 1. DISTRIBUTION OF DRY BEANS IN 1909

Counties with one per cent or more of their crop area in beans, as indicated.  
Ninety-four per cent of the bean acreage of the State is included

Rainfall, however, cannot be the only determining factor, because there are several other sections in the State that have the same light summer rainfall but that grow very few beans. Parts of Oswego, St. Lawrence, and Clinton Counties, in the northern part of the State, and a part of Broome County in the southern part, have a favorable rainfall but grow very few beans.

Soil is perhaps the factor of second

buckwheat. This probably explains in part why the favorable rainfall in sections of these counties does not induce bean growing.

It will be noticed that every county in this bean section of the State is also included in the wheat section. (See vol. 12, p. 727). Beans are important only where considerable wheat is grown. This fact suggests that the economy of growing wheat after beans without plowing,

as is common practice in the bean section, together with the somewhat better yields of wheat obtained after beans as compared with the yields after oats, is an important factor in determining where beans shall be grown. This may or may not allow one to figure greater profits on the beans. But it does add to the profits of the business as a whole, other things being equal, and this is what the farmer is looking for. Because of this economy farmers who do not grow wheat cannot compete in bean growing with farmers who do grow wheat, unless they can get considerably better yields. The fact that practically no wheat is grown in Oswego, Jefferson, St. Lawrence, and Clinton Counties explains further why beans are not important in these counties although their rainfall is favorable.

Length of growing season also limits the bean-growing area. Although beans mature in a shorter period than does corn, they really require just as long a season, if not a longer one. An even stand can be secured only by delaying planting until the soil is thoroughly warm and mellow. Late planting is necessary also because the plants succumb to very light frosts. Then the season must be long enough to mature the crop and still leave time for wheat planting. Most of the beans are grown where the season is one hundred and sixty days long. The favorable rainfall for bean production in certain parts of Broome County is offset by too short a growing season. The season averages only one hundred and thirty days, which is too short for beans and which also indicates winters too severe for wheat. Furthermore, the soils of that county lack sufficient lime for profitable bean production.

Competition with other crops also helps in determining where beans shall be produced. Orleans County had in 1909 almost one-seventh of its crop area in beans, but the adjacent county, Niagara, with climatic and soil conditions apparently as favorable for the crop, had only 2.3 per cent of its crop area in

beans. This county is probably better adapted to peaches, pears, quinces, and plums than any other county in the State. These fruits, especially the peaches and the pears, require labor at about the same periods as do beans. Consequently the less profitable has to give way to the more profitable. The fruits apparently pay better than beans in Niagara County.

Competition with other crops nearly eliminates beans in Erie County also. More than half of this county has a bean climate, and the farmers grow wheat but comparatively few acres of beans. One reason is that much of the soil in that part of the county is a clay or a clay loam, too heavy for very profitable production of beans or of any other cultivated crop. Because of this, competition between the cultivated crops on the soils that are suitable is all the keener. The proximity of this section to the Buffalo markets gives it an advantage in the production of truck crops, small fruits, and potatoes, which is decidedly greater than in the production of beans. Beans are storable, and the transportation costs in relation to the value of this crop are so low that nearness to markets is not a very great advantage in growing them. Hence most of the land in Erie County where beans might be grown profitably is devoted to these other crops, which pay better.

Outside the bean-growing section, the reason frequently given for not growing the crop is lack of bean threshers and of picking establishments. This is not a reason, but instead is evidence that the real reason is climate, soil, or competition with other crops. Beans were threshed with the flail and entirely hand-picked long before the later conveniences were common. The bean-threshing and bean-picking outfits were introduced where beans were grown.

Year after year beans are tried by some one outside the bean section. The results of these experiments in general check with those of the preceding generations. Something else pays the farmer better for his time. Farmers in this



State find that bean growing is desirable in their systems of farming only where a certain combination of factors exists. The factors are: light summer rainfall, 16 inches or less from April to August inclusive; a soil well supplied with limestone and not so heavy as to make cultivation difficult; wheat raising in the system of farming; a fairly long growing season, generally one hundred and fifty days or more; and absence of more profitable crops requiring labor at the same time or requiring the land.

ing varies markedly in different sections. Over most of the State, from 40 to 60 per cent of the crop area is devoted to hay. But in New York, Richmond, and the Long Island counties the proportion of crop area in hay is from practically nothing to only 25 per cent. Through the northern half of western New York, from 25 to 40 per cent only of the crop area is in hay. On the other hand, Cattaraugus and Allegany Counties devote from 60 to 65 per cent of their crop area to hay; Dutchess, Putnam, and



#### BEANS GROWN IN LIVINGSTON COUNTY

Comparatively dry seasons make bean harvesting easy

##### Hay

The humid and comparatively cool climate of New York is especially favorable for hay production. Northeastern United States is the hay market of the country because of the great city horse population and also because of great numbers of dairy cattle. Hay is so bulky, and the shipping costs are so high in proportion to its value, that New York has a decided advantage over more distant States in marketing hay. These conditions make hay the most important crop of the State. Ninety-one out of every one hundred New York farms reported in the last census produced hay. Every county in the State grows hay. This crop is more widely distributed over the State than any other.

In spite of this fact, however, the importance of hay in the systems of farm-

Westchester Counties, from 60 to 70 per cent; the central part of northern New York, from 60 to 80 per cent; and the section comprised of Broome, Chenango, Otsego, Delaware, and Sullivan Counties, and parts of adjacent counties, from 60 to 80 per cent.

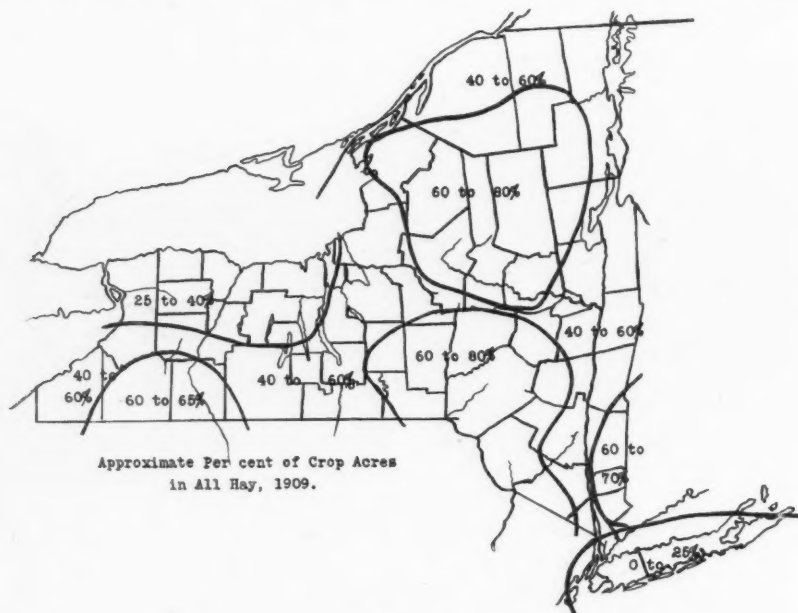
In seeking an explanation of this, the first thought is that hay is given more importance where it yields best and less importance where the yields are generally low. A study of the census reports since 1880, however, reveals the fact that, while there are definite areas of high and low yields of hay (which, as a note of interest, are closely correlated with rainfall), they bear no consistent relation to the areas of much or of little hay. Some of the areas of low yields overlap the areas of high yields, and one area of high yields has the smallest pro-

portion of hay. Hence other factors must be the cause.

From a study of Chart II, and a consideration of the topography of the State with its influence on length of growing season and on land values, it appears plainly that the better agricultural sections grow the smallest proportion of hay and the poorer sections grow the largest proportion of hay. This probably means that at the higher elevations, where the

the yield. Hay is a safe crop in other respects also. It is not perishable, as are potatoes or cabbage, and furthermore it may be marketed or fed on the farm as conditions warrant. It is comparatively difficult to lose money on a hay crop. With conditions unfavorable for very profitable farming, the natural tendency is to devote a large proportion of the crop land to the surest crop.

One other condition helps to explain



Approximate Per cent of Crop Acres  
in All Hay, 1909.

#### CHART II.

growing seasons are short—one hundred and forty days or less—where fields are smaller, more irregular in shape, and rougher, and where hauls to market are long, hay is the most profitable crop, almost regardless of yield. Generally the only other crops that are practicable in these parts of the State are fodder corn, buckwheat, oats, and sometimes rye. Hay is not only a more profitable crop than these under such conditions, but it is also a much safer crop. Very little expense and practically no labor is invested until harvest time, and then the labor is somewhat proportional to

the proportionately large hay acreage in these sections. Much of the cleared land is suitable only for pasture purposes, because of rough topography. Many farms have one-half or more of their area in pasture. In order to utilize this pasture, it is necessary to keep more cows than can be wintered on feed from the tillable land. Since all the feed cannot be grown, of course the most profitable will be grown; and since some feed must be bought of course that which can be shipped in and handled with the least cost will be bought. So the farmers in those sections generally raise all the hay

needed, or as much as they can, and buy all or most of the grain feeds. Whatever grain is grown is usually grown for rotation and reseeding purposes, primarily. Most of the crop land is in hay, and the meadows are cut as long as the yields pay.

Very different conditions prevail in the two sections where relatively little hay is grown. Heavy rainfall makes

In the northern part of western New York, hay has to compete with a great variety of crops all adapted to the section because of the long growing seasons, favorable topography, and generally fertile soils. Most farms in this section, besides growing hay, oats, wheat, and sometimes corn, can grow profitably one or more of such crops as apples, other fruits, potatoes, beans, cabbage, canning



#### MARKETING HAY

**Hay is most important in New York systems of farming where conditions are not favorable for such crops as fruits, beans, cabbage, potatoes and tobacco, and where conditions make dairying necessary**

high yields common in New York, Richmond, Kings, Queens, and Nassau Counties. But in spite of this fact, the area of hay in these counties, and also in Suffolk County, is small in proportion to the area of other crops. The location of this section in relation to markets, combined with a long growing season—from one hundred and seventy to more than two hundred days—usually ample rainfall, and a great deal of light soil, makes truck crops very profitable. The high-priced land makes profitable hay production almost impossible. On the light soils of this section hay does not do well. Great quantities of manure are available from city stables; because of this, the hay crop is not so important for maintaining humus as in other parts of the State. All these conditions cause the relative unimportance of hay in this section.

factory crops, and, near cities, truck crops. Generally these crops pay as well as or better than hay. Therefore, the tendency is to grow as much of these crops, together with the grain crops and hay, as will make a practicable distribution of labor. Instead of having one-half or more of the crop land in hay, only from one-fourth to two-fifths is in hay.

Very few farms, however, go to the extreme of having no hay, as is common near New York City. Not having city stable manure in great quantities, farm manures and a sod to plow under are the most economical means of maintaining the supply of humus. Land values are not so high as to prevent growing hay at a profit. So it is usual to grow at least enough hay for the stock kept, and to furnish a sod to plow under on each field every three to five years.

# HOME ECONOMICS

## Demonstration Schools for Homemakers

BY MIRIAM BIRDSEYE

Assistant Professor of Home Economics, New York State College of Agriculture  
at Cornell University

Since a large proportion of every one's income is spent on food and in the general upkeep of the home, it is not strange that a course in homemaking should be given a place with other trades in a prevocational school. To make work successful it must be standardized, and this may be given as an important part of the homemaking course.

There are many things which housekeepers cannot learn from books but must gain from their experience. It is to the schools that we must look to give the opportunity for this experience with guidance and supervision.

In the course of homemaking there is an opportunity for individual work and development, as each girl spends three hours a day at this work and the classes are limited to from sixteen to twenty persons.

The equipment for such a class is a four-room apartment, either connected with the school or in the near neighborhood, so that little time is lost between classes. This apartment is model in its appointments, but it is appropriate to the means of the children who are studying in it. In the selection of utensils, as in all other fittings, economy is the chief consideration—not low price alone, but low price and durability.

Let us look at a class at work. It numbers sixteen and is divided into five groups—three groups of four and two groups of two each. Visitors have been invited to come in for a simple luncheon and the girls' problem is to have the

apartment appear at its best, and to offer hospitality. The first group of four girls goes directly to the kitchen, where they immediately begin the work of polishing the stoves and the brass, sweeping and dusting, airing the ice box and attending to many other things which they find to do. In the dining room we find the next two groups. During the day, except at meal times, this room is used as the sitting room, so that the dining room table is covered with a large table scarf, with books and magazines arranged on it. Two of the girls go to this table to prepare the luncheon menu, figuring the cost and making a market list which they present to the kitchen group for marketing. The other girls in this room, having done the dusting, are now ready to polish the silver. In the same way other groups are at work at several tasks in the bedroom and the bathroom.

When the visitors arrive they are met by two girls who act as hostesses. The same girls entertain at the table when luncheon is served. In this way the girls not only are taught how to do the housekeeping and the marketing, but also have an opportunity to entertain, which arouses pride in their work, which in turn induces better work.

On the following day the groups exchange places, so that each girl becomes accustomed to the different tasks that housekeeping offers. Near the end of the term, girls are selected to take charge of the entire work of the department. The girls are trained in shouldering responsibility by holding this

position of superintendent, and it gives them confidence in their own ability.

There is a great field for work of this sort. It is needed alike in city and in country. And it is to the graduates of the home economics departments of the various colleges that we look for leaders.

Following are the names of the conference speakers and the subjects upon which they talked:

Opening Address, Mrs. G. S. Martin; "What Cornell Women are Doing," Miss Fowler; "Industrial Welfare Work," Miss M. Gilson; "Salesmanship," Miss B. Kennard; "Institutional Management," Miss E. Gunther; "Public Health Work," Dr. H. H. Crum; "Institutional Agriculture," Miss M. Landman; "Corrective Work," Mrs. M. P. Falconer; "Educational Openings," Dr. Coursalt; "Social Service," Miss M. A. Dingham.

#### THE VOCATIONAL CONFERENCE

The second Vocational Conference, under the auspices of the Women's Student Government Association, was held on January 18 and 19. The purpose of the conference was to bring the undergraduate women in contact with those actively engaged in the business world and learn from these active workers the vocations which will be open to them upon graduation. Previous to the meeting a vote was taken to determine the relative popularity of the various vocations to be considered and the program was arranged with regard to the desires of the students.

Especially interesting among these speeches were those of Miss Gilson, who is engaged in factory work in Cleveland, Ohio; of Miss Kennard of New York University; and of Miss Dingham, representing the national Y. W. C. A. Mrs. Falconer, who spoke on Corrective Work, and Miss Landman, whose subject was Institutional Agriculture, were also able

to speak interestingly out of actual experiences together as superintendent and head farmer at Sleighton Farms, a corrective school for girls near Philadelphia.

The following list shows the relative popularity of all subjects proposed, as shown by popular vote among home economics students:

1. Educational Work
2. Dietetics
3. Social Settlement
4. Institutional Management
5. Public Health Work
6. Newspaper or Magazine Work
7. Secretarial
8. Physical Training
9. Corrective
10. Agricultural
11. Y. W. C. A.
12. Landscape Architecture
13. Architecture
14. Law

It being impossible to treat with all these desired subjects within the range of a two-day conference, it was deemed expedient to bring in outside speakers at various times throughout the year as well as during the time of the conference. Miss Edson of Rochester has already addressed the students on "Opportunities in Physical Education" and during the second term Franklin Matthew of New York will talk on "Opportunities in Journalism."

Each speaker gave information along her particular line in accordance to the following outline:

1. Opportunities in the field
2. Training Necessary
3. Renumeration
4. Attractive and Unattractive Features of the Work.

The conference is largely the outgrowth of a Vocational Bureau for Women, founded last November. Professor Ernest Merritt is chairman of this bureau.



# THE CORNELL COUNTRYMAN

FOUNDED 1903

INCORPORATED 1914

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AT CORNELL UNIVERSITY, ITHACA, NEW YORK

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Entered as second class mail matter at the post office, Ithaca, N. Y., under Act of Congress, March 3, 1879

## Elections

As a result of the sophomore editorial competition which closed prior to Christmas, we are glad to announce the election to the board of Russell R. Lord of Cockeysville, Maryland, and Eugene B. Sullivan of New York City.

## The Horticultural Number

Because Horticulture continues to hold its high place in the study of agriculture, we have this year followed the custom of devoting an issue to this field. New York State leads the Union in floriculture, in the production of vegetables and in the production of fruits adapted to its climate. New York may well be proud of her fertile soils and favorable climates, but she has great problems of transportation and marketing, which still remain to be solved. Hardly ever before were the opportunities so great for well-trained horticulturists, not only in the production of the highest quality of marketable goods, but in the working out of these market problems.

## Farmers Week

The COUNTRYMAN takes keen delight in welcoming visitors to the Ninth Annual Farmers Week, Feb. 7-12. This is an annual event which has increased its scope of attractiveness and helpfulness so that at the present time it is the State's largest convention of men and women interested in country life. To the alumni of the College, Farmers Week is of more than practical value. It is the one week of the year that brings them in personal contact with the members of the faculty with whom they were as students associated; it is the week of class reunions, which bring with them the so many and pleasant reminiscences.

To the farmer, a week in the New York State College of Agriculture at this particular time should be the most profitable of the whole year. Special effort is made to present, in the most condensed and practical form, information on better farming. Some 350 lectures have been arranged, which will cover the educational, religious, and social sides of country life. New York State farmers, the College swings wide-open its doors and turns over its staff and student body for your service.

**Ten Days  
Before  
Examinations**

It is a custom among the faculty of the College of Agriculture to give no examinations during the ten days preceding the finals. There is to our knowledge no definite rule to this effect; it is just a tradition handed down from year to year. Consequently the student body has come to expect the faculty to give no examinations whatever during the ten days preceding the opening of "block week."

This year there seems to be little or no regard for this custom. Many instances have already come to our attention where examinations were given within the ten-day limit. This has caused considerable resentment in the student body, for most undergraduates during the last two weeks of the term are busy with term reports, assigned reading, making up back work, and with preparation for the finals. Is it playing fair with the students to ignore the ten-day limit? Why break a commendable custom of the College?

**The Farm Bureau  
Publications**

The COUNTRYMAN is very glad to welcome to its reading table the publications of the various Farm Bureaus with which it is exchanging. They are worth reading. Plainly printed on plain paper and evidently gotten out by busy men, they come to us devoid of those ornaments and superficialities which encumber so many of our agricultural papers. Brief, crisp, almost brusque in content, they bring word of the growth of a great work out in the open country; a work the beginning of which we, as agricultural students, have been privileged to witness and which, as graduates, we may hope to aid.

Particularly we would commend such effort as that manifested in the special Christmas issue of the Nassau County Farm Bureau News. In margining their cover with holly leaves and quoting upon it from William Henry Channing's *My Symphony*, the editors have in no sense departed from the practical standards of their organization. Rather, they have struck that which we interpret to be the keynote of all real rural progress—the evolution of a better, happier, and more cultured countryman.

**Farmers Week and Junior Week**

It is extremely unfortunate that Farmers Week and Junior Week conflict this year. Undergraduates of this College are interested in both of these affairs and naturally want to participate in both. Cornell is known the country over for its Junior Week and the College of Agriculture for its Farmers Week, but the importance of both of these events is sadly diminished by the conflict.

The College depends on student committees' aid in the convenience and comfort of the 5000 farmers expected here at that time, but it is evident that many students will hesitate before accepting such work on the various Farmers Week committees, because of their obligations as Junior Week hosts. It is promised that this conflict will not come next year, and probably never again. The date of Farmers Week is set to follow the meeting of the State Grange, which ordinarily convenes during the first full week of February.

**Plans**

The results of the senior questionnaire recently issued by the College indicate that there is dissatisfaction with present faculty advisory system in the College. It is going to be a hard problem to solve. The COUNTRYMAN expects to do its part by an inquiry as to the practices of some of the important agricultural colleges of this country, the results of which will be published in a future number.

**Rural Preparedness**

While military preparedness, industrial preparedness and kindred terms are on every tongue, it would be well for us to realize that the whole solution of success in any phase of endeavor is preparedness. Anything less than a thorough preparation will yield indifferent success or failure. College courses offer great opportunities for the development of necessary skill and knowledge for the successful pursuit of many callings. In many branches of agricultural work, however, more practical knowledge of the subjects is needed than can be given by a single institution to several thousand students. For the profession of actual farming, training in the real thing, "next to the soil" is indispensable. As with swimming, farming cannot be taught to the novice from books. This form of practical preparedness is therefore of extreme importance to the prospective husbandman from the town or city home.



## Campus Notes

### **\$10,000 Gift to Military Department**

At the Founder's Day lecture, President Schurman announced a gift of \$10,000 from Willard D. Straight, '01, to be used by the Department of Military Science and Tactics. The President stated that this is the first gift of its kind received by an American college.

The Department has decided to use the gift to establish an annual summer camp of two weeks duration. Complete field equipment, including two motor truck transports, will be purchased. It is estimated that at least six hundred cadets will attend and that they will be able to accomplish as much in two weeks as recruits do in five weeks at Plattsburg.

Speaking at the reception tendered him by the cadet officers, General Leonard Wood, U. S. A., the Founder's Day orator, said that he would like to see some of this money spent to bring the Cornell Cadet Corps to Plattsburg as a regiment.

### **Cornell Breed Testing Station**

On November 6 the Department of Poultry Husbandry started its 1915 breed test, the object being to give the poultrymen of the State an opportunity to have their birds officially tested on a common basis. Various persons, companies, and associations have entered flocks of ten individuals, representative of their particular strain or breed. These have been trap-nested in order that their eggs may be graded in size, shape, and texture. Other factors to be considered in the competition are the apparent vitality and

percentage of mortality of the flock, the cost of producing eggs and their money value, the average fertility of the hens, and the percentage of chicks that hatch from their eggs. Complete records will be kept and these will be made public in periods of seven days. While in these weekly reports the names of the owners of the fowls will be withheld, the complete records of all fowls that qualify as high producers will be published, together with the names of their owners, at the completion of the test.

### **College to Issue a Cornell Letter**

To take the place of the Announcer, publication of which was discontinued in 1914, the College contemplates the publication of a four-page monthly to be known as the Cornell Letter. The page size will be 9 x 12 inches, carrying three columns of newspaper width. The edition will be limited, the object being to make those who receive it disseminating centers of information for their communities. It will be sent to all former students who desire it.

While at first the Letter will be issued only monthly, there is a possibility that later it may be issued more frequently. Each month it will contain a summary of helpful hints for work on the farm during the succeeding month. It will give a résumé of recent work at the College, and will announce new courses, special lectures, and new publications.

The Letter will be prepared by the Information Service in cooperation with the Department of Extension Teaching. Professor Bristow Adams will have direct

charge, and B. W. Shaper, '14, will act as his assistant. The first issue, it is announced, will be published before Farmers' Week.

**General Wood  
Founder's Day  
Orator**

Founder's Day was celebrated on January 11 this year, when Major-General Leonard Wood, U. S. A., made the annual address in Bailey Hall, speaking on "Military Training in Schools and Colleges." He said in part: "I know of no country—certainly none among the great nations—where military education is more needed in school and college than in these United States." He then proceeded to make clear the great need for trained men to command the volunteers raised in time of need. The schools and colleges of the country furnish the best and largest source of supply for this type of officer. Standardization of military training in universities and lower schools is most necessary, however, if this training is to result in the establishment of an adequate policy of preparedness.

General Wood's conception of the principal purpose of the military instruction given in school or college is that it should bring home to every boy and girl, every man and woman, an appreciation of the real facts of our military history. When this is accomplished we shall have action based on information concerning the past, less Fourth of July eloquence, and more sound, thoughtful study of the situation.

**Dean Galloway  
Addresses Syracuse Alumni**

Dean Beverly T. Galloway spoke at a luncheon given by the Cornell alumni of Syracuse on January 13. The title of his talk was "The Work of the College of Agriculture: Its Relation to Cornell University, the State, and the Nation." Dean Galloway told of the work the College is trying to do in all those things that will uphold the ideals and traditions of the University, and of the advantage of the College of

Agriculture in being a part of Cornell. Conversely, he treated of the advantages to the University as a whole in having as a part of it a college whose ideals are high and whose motto is "Service." In regard to the College and the State, he spoke particularly of the efforts that are being made to reach all the people in the open country and to understand and aid in the solution of their problems. In reference to the College and the Nation, he spoke of the work that is being done by the College in making its influence felt as part of a great national movement for universal education. It is possible to achieve tangible results in this direction largely through cooperation with the Federal Department of Agriculture and with other similar institutions elsewhere.

**Frigga Fylge to  
Present Playlet**

The members of Frigga Fylge, under the direction of Miss Sara Huff, are preparing a short play which will be presented as a part of the regular evening entertainment given in Farmers' Week by the different departments in the College.

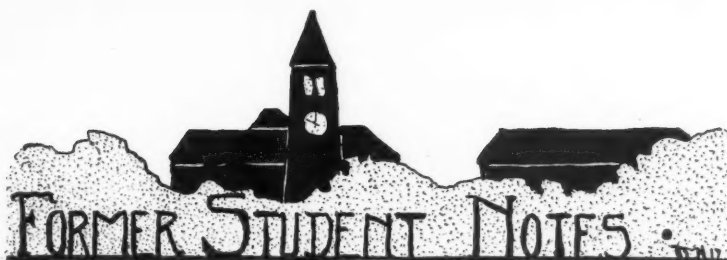
**Construction of  
New Armory**

Construction of the new armory on the campus is progressing rapidly and its completion by September of 1916 is now practically assured. The exterior is receiving some finishing touches, while most of the working force are concentrating their efforts on the roofing and the interior features.

The building is being erected by the Government from a \$350,000 appropriation made in 1914. It occupies nearly three acres, and contains a drill hall 376 feet long and 225 feet wide covering a floor space of nearly two acres. It has been estimated that the drill hall will seat 16,000 persons. In addition to the drill hall there are to be officers' quarters, non-commissioned officers' quarters, a rifle range, a trophy room,

(Continued on page 420)





## FORMER STUDENT NOTES



'04, Sp.—George N. Allen entered the College of Agriculture in September, 1901, and with a total capital of \$10 proceeded to earn his way through college. To earn his expenses he did various odd jobs around the College, such as milking cows and raising hot-house lambs for Professor Wing. During the summer months also he worked for Professor Wing, testing cows on various farms throughout the State. At the end of his third year at Cornell he decided to leave college, and accepted a position as dairy manager of Woodcrest Farm, at Rifton, Ulster County. After spending a few years in this capacity he went to Wheeling, West Virginia, as manager of the Reymann estate of 10,000 acres. On this farm he produced the first certified milk ever produced in West Virginia. In addition to

the production of certified milk he made a specialty of purebred Ayrshire cattle and White Leghorn fowls. He held this position for nearly four years, at the conclusion of which he entered the employ of the Chase Motor Truck Company, of Syracuse. He is now manager of the tractor department of this company. He has been working for this company for the past ten years, but has been actively engaged with them for only the past five years. In these five years he has spent much of his time in perfecting a farm tractor, and the latest model of the Chase tractor as exhibited at the Fruit Growers' exhibit in Rochester last month is the result of Mr. Allen's efforts along this line. Mr. Allen is now in the southern Mississippi Valley, where he has been detailed by the company to study the Mississippi delta region from the standpoint of the manufacture of tractors, giving due consideration to the financial situation there. This is the second visit he has made to this region within the past year. Because of his broad education in the field of agriculture, Mr. Allen is often consulted in matters concerning the large farms near Syracuse owned by Colonel Chase. Mr. Allen himself owns a farm of 221 acres in Washington County, on which he raises apples and potatoes as a cash crop in connection with general farming.

'94, B. S.—Harry Haywood, director of the Delaware Experiment Station, recently called on Professor Wing. Mr. Haywood was on his way to Chicago, where he was to represent the State of Delaware in the Third Annual Conference on Marketing and Rural Credits.

'00, B. S.—J. Bennett Nolan, of Read-

ing, Pa., announces the birth of a son, James.

'05, B. S. A.; '07, M. S. A.—L. G. Dodge is with the Farm Management Department at Washington, D. C., in charge of field investigations in the Northeastern States.

'08, B. S.—H. K. Fung is teaching in the Government University at Peking.

'09, B. S.—S. F. Willard, jr., was married last September to Miss Helen D. Buck, of Wethersfield, Connecticut. Their home is at 3147 Prospect Avenue, Cleveland, Ohio.

'09, W. P.—John H. Marshall, whose address is Box 504, Hagerstown, Maryland, is running a truck farm of thirty acres near that city.

'09, W. P.—J. P. Landry was married last October to Miss Violet Mary Robins. The wedding took place at Truro, Nova Scotia.

'10, B. S. A.—George G. Becker is head of the Department of Entomology in the University of Arkansas. Mr. Becker is also state entomologist for Arkansas. His address is Fayetteville.

'10, B. S.—Grace Bennett, who is conducting a cafeteria on the grounds of the Department of Agriculture at Washington, D. C., has met with such marked success that the scope of her work has recently been increased. She now occupies two buildings, the second having been remodeled to suit the needs and meet every requirement of a model cafeteria. Four hundred persons are served daily. Besides this work Miss Bennett edits the household page of the New York Tribune Farmer.

'10,—'11, Sp.—C. E. Smith writes: "Enclosed find two dollars as advanced payment for my subscription. I enjoy the Countryman because it keeps me in touch with the College." Mr. Smith is managing a general farming ranch of five hundred acres on Carleton Island, in the St. Lawrence River.

'11, B. S. A.—Harold N. Humphrey has been employed since leaving Cornell by the Office of Farm Management, United States Department of Agriculture. As a result of investigations that he has recently made, a bulletin entitled *The Cost of Fencing Farms in the North Central States* has been compiled. Mr. Humphrey's address is 754 Quebec St. N. W., Washington, D. C.

'11, B. S.—Wallan G. Stephenson is agricultural chemist for the Cuban-American Sugar Company. His address is Pijuan, Cuba, care of the Cuban-American Sugar Company.

'11, M. S. A.—Edward H. Thomson was married last November to Miss Ethel Cutts, daughter of Mr. and Mrs. E. B. Cutts, of Milford, New Hampshire. G. H. Miller, '09, was best man. Other Cornell men present were S. M. Thomson, '13, brother of the bridegroom, and L. G. Dodge, '05. Mr. and Mrs. Thomson will reside at 1417 Belmont Street, Washington, D. C.

'11, W. C.—Timothy E. Donovan has been herdsman on the Broad Brook Farm in Westchester County since the spring of 1912. There are at present 132 head of cattle and 2000 laying hens on this farm. Fruit growing is carried on rather extensively, the peach and the apple orchards together consisting of 5000 trees. Mr. Donovan writes that he is to leave this place and take charge of a farm near Syracuse, where purebred Holstein cattle and thoroughbred Belgian horses are raised. He also writes that G. D. Brill, '88, B. S., is superintendent of the farm that he is leaving.

'12, B. S. A.—J. Coryell, whose address is 66 Hungerford Street, Burlington, Vermont, taught agriculture in a Massachusetts high school after leaving Cornell. Following this work he was county agent for Windsor County, Vermont, but has now accepted a position as assistant state leader in county agent work for the State of Vermont.

'12, B. S.—Raymond S. Washburn was

(Continued on page 428)

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### **Relation of the Government**

(Continued from Page 372)

fore, that Government may very prop-  
erly direct its energies toward the ques-  
tion of uniform legislation under which  
and through which the producers of  
farm crops may organize their indus-  
tries along lines that are safe morally,  
ethically, socially, and economically.

Government may establish principles  
of action, may go so far as to demand  
that these principles should apply uni-  
formly, and may very properly take the  
stand that it will see to it that the prin-  
ciples are lived up to by all parties con-  
cerned. How otherwise are our people  
to receive social and economic justice?  
I believe it has been the general rule  
that whenever the producers of an agri-  
cultural commodity have attempted to  
concentrate for the purpose of securing  
additional control of their product, the  
business has eventually passed into the  
hands of nonproducers, owing largely to  
the absence of proper protective laws or  
of any laws whatever. These nonpro-  
ducers have then proceeded to organize  
the business and to conduct it, not so  
much with the object of rendering jus-  
tice to producer and consumer as for  
the purpose of insuring the largest prof-  
its to the organizers permitted by the  
laws of the land and by their own con-  
science.

We have only to recall what has taken  
place in this country in the past thirty-  
five or forty years to realize what these  
changes mean. In the handling of cot-  
ton, of grain, of meats, and of milk, all  
vital to our welfare, we have seen un-  
controlled concentration developed to  
the point where the concentrators so well  
control the situation that those who  
provide the raw products can no longer  
afford to take the risks; hence they give  
up the business. The raising of cattle  
in the Middle West is no longer a busi-  
ness with the farmers; it is a gamble.  
The milk situation is very little better.

It must not be understood that we are  
advocating specific legislation and gov-

(Continued on page 400)

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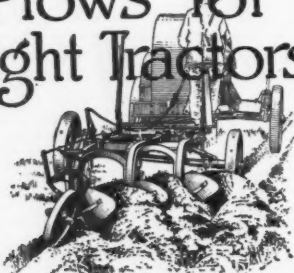
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## Relation of the Government

(Continued from page 398)

ernment action to correct all these matters. The greater number of the problems can be met, as we have already pointed out, by the extension of knowledge and the further encouragement of all those things that the Government may do in the direction of stabilizing agriculture. Proper crop rotations, systems of farm management, prevention of losses to crops and animals through diseases and insect attacks, adaptation of crops to soil and climate, introduction of new crop industries, the breeding and improvement of plants and animals, will all tend toward stabilization.

Government may very properly play another important rôle in the marketing problem, and that is in lending its aid in the matter of determining and fixing standards. Many of our existing difficulties would be overcome if trading in agricultural products could be done on a basis of fixed grades and standards, such as would be recognized as fair and just to all parties involved. Government, and Government only, can determine the principles and factors on which these grades and standards should be fixed. To make such grades and standards effective and acceptable without question will require much painstaking scientific and technical work. Here is an important function of Government, and one that should be fostered and encouraged in every way.

Government may also very properly function in developing the principles that should govern in the storing and warehousing of farm products. Undoubtedly our food supply would be greatly stabilized, and the violent fluctuations in prices, detrimental to both producer and consumer, could in a measure be overcome, by a proper system of regulated storage. Here again we must guard against the fallacy that relief will come through mere legislative action without regard to the fundamental economic, biologic, chemical, physical, and other laws involved. For example, a mere fiat that eggs should not stay in storage longer than thirty days or ninety days will not solve the problem of the

(Continued on page 402)

## All the Wild Game You Want

FOR many years we in America have spent much time bemoaning the disappearance of our feathered game. But the fact that we have little game to shoot and little to eat is due solely to our own lack of initiative. We *should* have an abundance of game in the fields and on the market. We may obtain such an abundance by creating a supply equal to the demand. This can be done by increasing nature's output through game farming. And moreover, the demand of the sportsman may be much greater than at present, and still be easily met.

We have the land available to make America the greatest game producing country in the world. Utilize it, and everyone will have more opportunities to indulge in field sports. There will be more shooting for all of us, whether or not we have access to a preserve, because game that is raised for sporting purposes *can not be confined in any restricted area*. Wherever game is intensively cultivated, we find improved shooting in all the surrounding territory.

To anyone who has a small amount of land, game farming will prove profitable. The demands for eggs and for breeding stock is much greater than the supply, and will be for years to come. Pheasant eggs sell today at from \$20 to \$25 a hundred. Live birds bring from \$5 to \$7 a pair.

To those who own large acreage, game farming either provides sport, or profit from those who will pay for sport.

To the city man, it opens the possibility of enjoying good hunting near home.

To everyone who shoots, it brings increased pleasure afield. Game farming means an addition to our food supply that will be welcome to all.

But this subject is too big to be properly treated in this space. If you are interested in it, either as a sportsman, as a prospective breeder, or simply because you believe in the movement as constructive and progressive, write for the book, "Game Farming for Profit and Pleasure," which will be sent to you without cost. It tells of the subject in a most interesting and informative manner. It is well worth reading. Fill out the coupon below and a copy will be mailed you at once.

Game Breeding Department, Room 35

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### Relation of the Government

(Continued from page 400)

storage, marketing, and distribution of eggs.

Finally, the question may be asked whether Government might not very properly function in the gathering and quick dissemination of information regarding perishable products which would be helpful to producer and consumer alike. The United States has developed one of the best weather services in the world. Its daily weather reports, obtainable now in every little hamlet and farm home, are of incomparable value to agriculture, to commerce, and to all industries. There has also been developed a most thorough and efficient system of crop reporting. Some preliminary work has been done by the United States Department of Agriculture in this informational marketing field. This work, to be effective, must necessarily be expensive, and it is a question whether the lack of knowledge on the part of those who most need it will not keep them from knowing how to use it. The knowledge will come, however, and a combined climate, crop, and market informational service is something that should be looked forward to in the consideration of any questions having to do with the relation of Government to the marketing problem.



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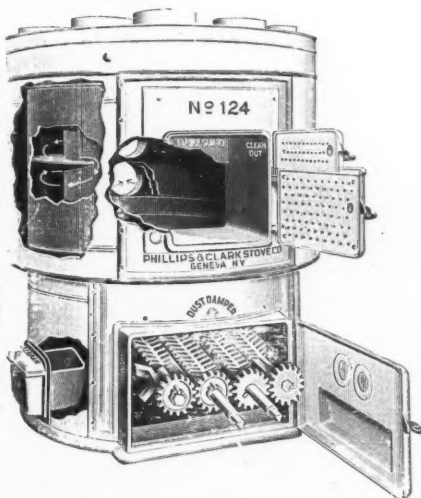
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### Dusting and Spraying Experiments with Apples

Results of recent experiments made by the Cornell University Agricultural Experiment Station indicate that the application of suitable powdered materials, with air used as a carrier, will control the apple scab disease and certain apple insects as well as does the commonly employed fungicide and insecticide applied as a spray with water as a carrier.

Last summer an experiment was conducted on an apple orchard in New York State, in which one plat was treated with lime-sulphur solution, one was treated with a dust application, and one was left untreated. The spraying solution was applied with a power spraying outfit having a pressure of about 150 pounds. Two men and a team were used to operate the sprayer. Two lines of hose were used, one man spraying from a tower and the other man from the ground. The dust mixtures were applied with a power outfit operated by an old gasoline engine rated at 2 horse power. All applications of spray and dust were made from both sides of the trees and were thorough. No effort was made to apply the dust to the foliage while it was still moist with dew, but on at least two occasions the leaves were moist.

The cost of the dust mixture was considerably more than that of the lime-sulphur mixture, and it would therefore seem that the total cost per tree would favor spraying but for the fact that the extra time spent in spraying raises the cost considerably. In this experiment the dusted trees were covered about four times as fast as were the sprayed trees.

The relative quantities of the essential fungicidal and insecticidal ingredients applied per tree are of interest. The amount of sulphur applied to the sprayed trees cannot be determined exactly, but was, on an average, ap-

(Continued on page 410)

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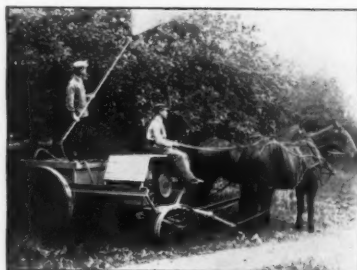
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BULLETIN No. 286

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## Dusting and Spraying Experiments with Apples

(Continued from page 406)

proximately 4.6 ounces per tree, with 1.93 ounces of arsenate of lead. In the dusted plat, trees dusted with the smaller amount of the mixture received on an average 9.3 ounces of sulphur and 2.33 ounces of arsenate of lead per tree, and those dusted with the larger amount received 12.28 ounces of sulphur and 3.07 ounces of arsenate of lead per tree.

The results of the experiment showed that more than 29 per cent of the apples on the untreated plat were infested by the codling moth. On the sprayed plat, injury by this insect was reduced to less than 11 per cent, while on the plat treated with dust the injury was reduced to 5.5 per cent. The only possible explanation for the superior results obtained on the dusted plat lies in the better distribution effected by the dust method.

It now seems settled that a mixture of an insecticide and a fungicide can be applied in powdered form, using air as a carrier, with better commercial results in the control of preventable apple diseases are of apple insects than can be obtained by spraying. At the same time, the dust method makes it possible for the owner of a large acreage to protect his orchard at critical times, a thing that he has not been able to do with the slower liquid process.

Those who cannot cover their orchards in less than a week or in two weeks will find much needed relief in the dust method, which admits of operation with one team, or even two teams, less, and thus allows for more extensive and better cultivation of field crops with the team left free for such work.

The time of application of dust mixtures for the control of apple diseases and insects does not differ from the time of application of sprays. (For further information see Bulletin No. 369, published by the Experiment Station at the New York State College of Agriculture).

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always strong. **Auto-  
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liquid and **cleaning**  
of strainers. Two noz-  
zles to each row for  
thoroughly saturating  
foliage both top and  
bottom.



**Fig. 1500**

## **The Empire King**

leads everything of its kind. Throws fine,  
misty spray with strong force. **No clog-  
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**brushed and kept**  
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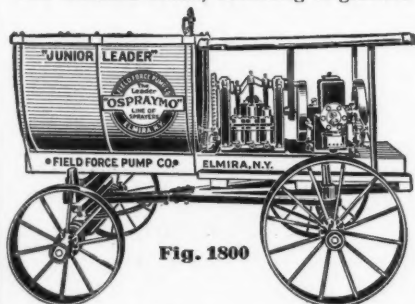
Can be furnished on different size casks and  
also fitted for spraying 4 rows of potatoes.



**Fig.  
180**

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are typical modern machines for large spraying operations. Combina-  
tion mounted outfits, consisting of gasoline engine, spray tank, pump,  
platforms, spraying appli-  
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**Fig. 1800**

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## Student Labor

(Continued from page 381)

been unsatisfactory. This was an astonishing report. Professor King had taken up the work with the feeling that students made poor farm help, but he was forced to conclude that the ill report of the one man had remained in the community, while the satisfactory work of the nine was soon forgotten.

People in general have a peculiar idea of college students. Last summer another student and I went into New Jersey to work on a peach farm, and after we had been there for about a week we learned that the half dozen men employed there had all but quit the night before we arrived, simply because there were to be college students on the place. I do not know what their idea of us was, but I do know that they were extremely shy of us for the first few days. However, after they had seen us in overalls and we had worked side by side with them and they had heard us say the same things they said when the stepladders broke under us, their shyness wore off. By the end of the summer we were pretty good friends and they as much as admitted that we were almost human.

In taking students to work, the farmer should rid himself of the idea that the individual is a student. He is a boy going out for experience, and at a boy's wages. The farmer should not expect as much of a boy as he does of an experienced farm hand who receives twice the wages. Allowance should be made for the fact that the boy has not had the experience that would make him do the right thing at the right time or in the right place.

What the student needs is a varied experience. He wants to become as familiar as possible with the different farm activities, and as important as any thing else is the personal contact with the farmer himself. His place is not on a great business farm, where he is placed under a foreman and hardly gets to know the owner. He should take a job on a

(Continued on page 416)

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Arsenate Lead Dry and Paste  
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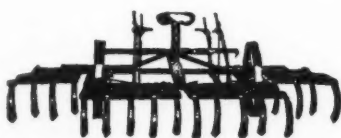
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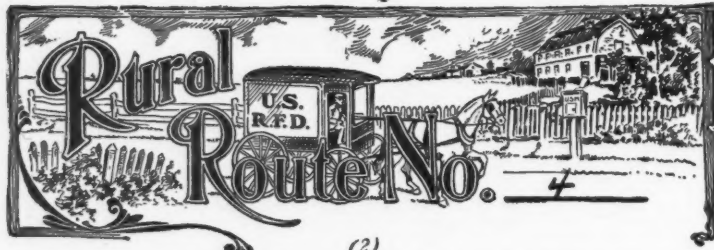
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## Copy of a Page from Father's Letter



(2)

no rain in October and the wheat is small and does not look like it would stand the winter well.

We finished husking yesterday. From the acre where we tried your theory about bone-meal and clover making the Potash available, we harvested 50 bushels of rather chaffy corn, and from the rest of the field, where we used bone, clover and 50 lbs. Muriate of Potash per acre, we husked out 70 bushels per acre of tip-top corn that is nearly all fit to sell on the ear for seed corn.

I figure that a ton of Muriate of Potash on 40 acres of corn will pay for a year's post graduate study for you and leave you a little spare change to chip in for athletics.

Mother and the girls are going to make a few days' visit to Aunt Sarah's

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Spring Planting?

### Student Labor

(Continued from page 412)

farm where he can work side by side with the owner himself.

For these reasons, if you have a big nursery and all you have to offer is a ten-hour-a-day job hoeing nursery stock, it would not be advisable to hire a student. If you are a big commercial fruit grower and all you need is a man to nail apple boxes all summer, it would not be advisable to hire a student. If, on the other hand, you think you have a place on your farm next summer for a student to become familiar with the different farm practices and with farm life, if you think you can give a student new inspiration for his life work and make him a better farmer or a better man, then write the College and tell what you have to offer.

Thus far I have spoken only of students from cities—those who are without experience but who feel that country life holds something of promise in

store for them. I should be greatly disappointed if any one got the idea that this class of students is typical of the students in the College. There are scores and scores of students who have been born and reared on farms and are already highly experienced; there are scores of students who have been reared in cities but who have spent their summers on farms and are now reasonably familiar with country life and country methods. But, being familiar with farms and farmers, these students find employment for themselves. The College, therefore, becomes interested in placing inexperienced students on farms.

The fruit grower must cooperate with the College in this work. Owing to your efficient organization, you make frequent requests of the College for help and advice. You ask for help in fighting the insect and the blight, you ask for advice on questions of the culture and the marketing of your fruit and on all

(Continued on page 420)

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#### The Only Sure Remedy is the A.B.C. Tar Felt Pads.

This is not an experiment,—Irondequoit and Greece Farmers were large users last year.

We have had only good reports from early Cabbage Growers in all parts of the United States.

One said: "Used 2,000 pads—95% of crops marketed—many heads weighing over 10 lbs. No crops for several years previous, all were destroyed by the Cabbage Maggots." Another big user said,—“We cannot grow Cabbage without them.” A farmer from Ohio said—“Save me 10,000. Had fine success last year.”

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 1 packet Corn, Ideal Sweet.  
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 1 packet Corn, Country Gentleman.  
 1 packet Cucumber, Early Fortune.  
 1 packet Lettuce, Grand Rapids.  
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1 packet Muskmelon, Rocky Ford.  
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 1 packet Radish, Extra Early Scarlet Globe.  
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 1 packet Squash, White Bush Scalloped.  
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 1 packet Tomato, John Baer, Earliest Grown.  
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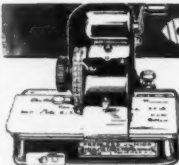
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23 Factories—Prompt shipments.

Where you saw it will help you, them and us

### Student Labor

(Continued from page 416)

the problems with which the fruit grower is confronted. In return the College expects you to take these students on your farms and give them the training that is essential—these students for whose education the institution was established and for whose education the College is now maintained.

### Campus Notes

(Continued from page 394)

and store rooms. The drill hall, measuring 88 feet from floor to ceiling, will be absolutely free from columns or obstructions of any kind. The west end of the building is to be of two stories, with towers on the northwest and southwest corners. The exterior is of native bluestone, trimmed with light buff Onondaga litholite.

Dedication exercises were planned for Founder's Day, but the plan could not be carried out owing to the accumulation of building material in and about the building.

**Farmers' Week for 1916** at well comes this year from February 7 to 12, according to an announcement just made by the College of Agriculture, which has provided for 5000 visitors. During this week the College endeavors to condense into practical form all the information that it has on better farming and the management of the farm home. There will be lectures, exhibits, and practical demonstrations on various farm subjects such as potato growing, poultry raising, dairying, forestry, home making, farm man-

(Continued on page 422)

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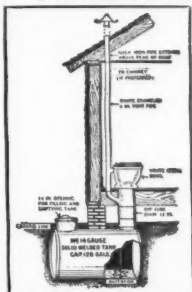
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### Campus Notes

(Continued from page 425)

agement, insect control, vegetable gardening, and flower growing. Rural schools, churches, and community organizations will also come in for a large share of attention. At the same time there will be held a number of conventions or conferences of societies that deal with agriculture and allied interests. Among others there will be meetings of the State Department Association, the New York State Federation of Floral Clubs, the New York State Poultry Association, the Rural Engineering Society, the Homemakers' Conference, the New York State Vegetable Growers' Association, and the Country Church Conference.

### A NORWEGIAN EXPEDITION

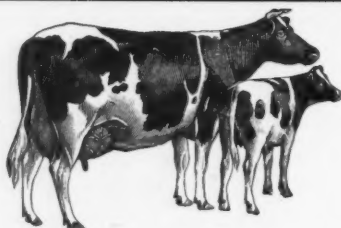
An expedition to study the evergreen trees of the northern Pacific coast, from

Oregon up through British Columbia, is to be sent out next spring by the Norwegian Government, preparatory to reforesting the barren Norwegian coast line.

Years ago the Norwegian coast was well timbered, but shipbuilders and loggers have cut away the firs and the pines without planting new ones in their places. Such trees as sprung up were killed by the cold as they lacked the protection of the old trees. The result is that the coast has become desolate and a source of wealth has been destroyed.

Within the last fifteen years, a national forestry society has been distributing pamphlets, giving lectures, and planting nurseries. But the native varieties are not so hardy as the evergreens of the northern Pacific coast, where climatic conditions resemble those of Norway.

The expedition will study American forestry methods in the former region during its visit, which will last from six to eight months.



## Purebred Registered HOLSTEIN CATTLE

**With 30 common cows**, each giving 3000 pounds of milk per year, introduce a pure-bred registered Holstein bull. In two years you will be milking grade Holsteins yielding with first calf 4,000 to 5,000 pounds. In 3 years, you'll have 6,000 pound cows and will need to keep only fifteen cows to get the same amount of milk. In seven years, you'll have 8,000 to 10,000 pound cows and a ten-cow herd will produce as much milk as your thirty cows do now. Quite a saving in labor, feed and equipment to say nothing of the increased value of your cows and calves. Investigate the big "Black-and-Whites."

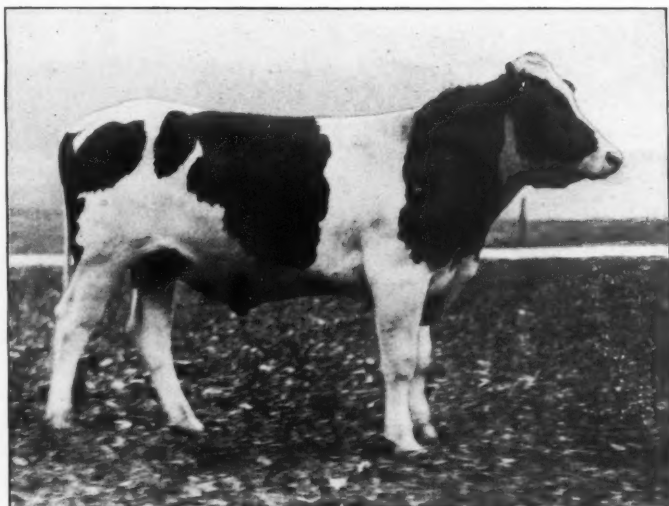
*Send for FREE Illustrated Descriptive Booklets*

**The Holstein-Friesian Association of America**  
F. L. Houghton, Sec. Box 196 BRATTLEBORO, VERMONT

Where you saw it will help you, them and us

# KING OF THE WALKERS

NO. 136512



His seven nearest dams have made records which average 31.04 pounds butter in a week and six of the seven have records which average 126 pounds for thirty days. 22 heifers and cows, each carrying from 50-80% of the same blood recently sold for \$24,000. Write for his pedigree and get your order in for a son.

NEWTON FARM      or      SHERBURNE STOCK FARM  
Sherburne,                      Sherburne  
Chenango Co., N. Y.              Chenango Co., N. Y.

Where you saw it will help you, them and us

# Hogs Gain Faster



## Prove It By Making This Test

Put a bunch of hogs or shoats in a separate pen or enclosure—feed them SAL-VET 60 days as directed, and you will get the best proof of its merits as a conditioner and worm destroyer. Wormy stock cannot thrive on the choicest of rations—balanced or unbalanced. Worms annoy—keep animals ravenous—run-down—ill-natured—discontented—unthrifty—liable to any disease.

Hon. A. J. Lovejoy, Roscoe, Ill., writes: "Please send us two barrels of SAL-VET at once. This is the best thing we have ever used. We use it for sheep, horses, and over 100 head of hogs and find it all you claim."

J. E. Snell, Flora, Ind., says: "SAL-VET is a wonder. I had 14 shoats that would not fatten. I fed them SAL-VET and I was very much surprised to see come from them rolls of worms from 12 to 14 in. long. These shoats mended at once, and are now doing finely."



—is not a food, but a medicated salt, fed with the ration, or separately according to directions. I guarantee it to rid stock of stomach and free intestinal worms, to aid digestion and to condition the animals so fed. All stock look better, do better, act better. Every animal having free access to SAL-VET is a standing advertisement of its value. I'll prove its value to you at my own risk.

## Send No Money— Just the Coupon

Tell me how many head of stock you have, and I'll ship you enough SAL-VET to last them 60 days. You simply pay the freight charges when it arrives and feed it according to directions. If it does not do as I claim and you make a specific report in 60 days, I'll cancel the charge—you won't owe me a penny. Address

**SIDNEY R. FEIL, Pres.**  
**THE FEIL MFG. CO.**  
Chemists  
Dept. 29  
CLEVELAND, OHIO

Sidney R. Feil, President, THE FEIL MFG. CO., Dept. 29, 2-16 CLEVELAND, OHIO  
Ship me enough SAL-VET to last my stock 60 days. I agree to pay the freight charges when it arrives and I will owe you nothing if it does not do as I claim and you make a specific report in 60 days, I'll cancel the charge and I will owe you nothing.  
I have \_\_\_\_\_ horses \_\_\_\_\_ hogs \_\_\_\_\_ cattle \_\_\_\_\_ sheep  
Name \_\_\_\_\_  
P.O. \_\_\_\_\_  
Ship to \_\_\_\_\_  
State \_\_\_\_\_



**Look For This Label**  
on all SAL-VET Packages. Don't be deceived by imitations. Don't say 'Sal' this or 'Sal' that. Get the original genuine SAL-VET.

PRICES	
40 lbs.	\$2.95
100 lbs.	\$6.00
200 lbs.	\$9.00
300 lbs.	\$13.00
500 lbs.	\$21.12

No orders filled for less than 40 lbs. on this 60-day trial offer. Never sold in bulk, only in Trade-Marked SAL-VET packages. Shipments for 60 days' trial are based on 1 lb. of SAL-VET for each sheep or hog, and 4 lbs. for each horse or head of cattle, as near as we can come without breaking regular sized packages.



# Heberle Brothers Nurseries

BRIGHTON, N. Y.

Nurseries at Brighton, Penfield and Morton

## We carry a full line of Guaranteed Nursery Stock

The New Rochester Peach, Founded and Introduced by Heberle Brothers. Large yellow and red; free and small stone; flesh yellow very highly flavored; to eat out of the hand or canned it cannot be equalled as a table delicacy and will ship as good as an Elberta.

The peach comes into ripening when there is no other yellow and red free stone on the market, two weeks before the Early Crawford.

The original orchard has borne its sixth annual crop, being the finest quality the trees have ever produced, some specimens measuring twelve inches in circumference and weighing twelve ounces.

1 YEAR ROCHESTER PEACH TREE



This is one of 500 set by Mr. Yarker in 1914, bearing 17 peaches in 1915

The fruit sold at the orchard and to local grocers at One Dollar per 11-quart basket.

The tree comes into bearing very young. The accompanying picture is an illustration of one of 500 trees planted by Mr. Yarker, Greece, N. Y., in the spring 1914, which produced 17 peaches in the month of August 1915. Mr. Rudman of Irondequoit, N. Y., informs us that he has one the same age in his orchard of 3500 Rochester trees bearing 27 peaches.

Where you saw it will help you, them and us

## **FRUIT GROWERS !**

We carry a wide line of

***Fruit Packages***

***Baskets***

***Crates, Etc.***

**COLES & CO.**

115 Warren St.  
NEW YORK

## **TREES *at* WHOLESALE**

***W. & T. Smith Company, Geneva, N. Y.***

Write for Catalogue and Prices

Our trees are not lowest in price, but we guarantee  
**Quality and Purity** of varieties, and such  
nursery stock is the cheapest

In writing to advertisers please mention The Cornell Countryman

## FOR SOME TIME

For some time it has been known that soap compounds left unsanitary greasy residues. It has also been known for some time that

**Wyandotte**  
Dairyman's  
Cleaner and Cleanser

does easily and does safely the work for which soap is often used—that of washing milk cans and other milk containers.

Indian in Circle



In Every Package

"Safety first" is a profitable principle to follow in caring for milk. Why not ask your dealer for **Wyandotte Dairyman's Cleaner and Cleanser**, or write your regular supply man.

**THE J. B. FORD COMPANY**  
Sole Manufacturers WYANDOTTE, MICH.

This Cleaner has been awarded the highest prize wherever exhibited.

**IT CLEANS CLEAN**

To Farmers' Week Visitors

**Established in 1868 with the University**

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have supplied every class that ever entered Cornell  
**Thousands of Agricultural Books** are on  
our shelves—both Required and Reference.  
**We deliver the goods to your room—**  
**Books at our Sheldon Court Branch, in**  
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**work for all departments : : :**

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PICTURE**

SOLD ONLY BY

**THE UNIVERSITY  
PHOTO SHOP**

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Framing, Lantern Slides**

Right and On Time  
Right and On Time  
Right and On Time

**STOVER**

Right and On Time  
Right and On Time  
Right and On Time

**PRINTING**

Right and On Time  
Right and On Time  
Right and On Time

**COMPANY**

Right and On Time  
Right and On Time  
Right and On Time

In writing to advertisers please mention The Cornell Countryman

### Former Student Notes

(Continued from page 396)

married last October, at San José, California, to Miss Flossa M. Roper, daughter of Dr. and Mrs. P. B. Roper, of Cleveland, Ohio. They are now living at 1417 Belmont Street, Washington, D. C.

'12, W. C.—Ellwood Douglass spent one year on a fruit farm in New York State after leaving Cornell, and then went on his own fruit and vegetable farm in New Jersey. Since November, 1914, he has held a position as county agent for Atlantic County, New Jersey, with headquarters at Mays Landing.

'13, B. S.—Burr C. Copley is manager of the York Brook Farm at Canton, Massachusetts, where he is engaged in the breeding of purebred Guernsey cattle and thoroughbred Clydesdale horses and Berkshire hogs.

'13, B. S.—Wesley Heebner took a course in photography at Bissell College, Illinois, after leaving Cornell. He has a large studio in Lansdale, Pennsylvania, where he is said to be very successful in his chosen profession.

'13, B. S.—George Lamb, who won his "C" in cross country, is farming with his brother and father at Hubbardsville, breeding purebred Holsteins.

'13, B. S.—E. D. Vosbury, who is in the Pomology Division of the United States Department of Agriculture, visited the College last term. Mr. Vosbury was for a time stationed in Florida, where he was especially interested in the marketing of fruits, including citrus fruits and apples. He is now engaged in similar work in Oregon.

'13, B. S.—Kenneth A. Boynton has charge of the herbaceous perennials in the New York Botanical Gardens, New York City.

'13, B. S.—W. M. Peacock, of the Department of Farm Crops, resigned on January 1 to accept a position as in-

(Continued on page 430)



This Cut Shows - - -

Manufacturers and Distributors of the  
**Famous CORNELL**  
**Poultry Appliances**

**GASOLINE BROODER HEATERS**

Trap Nests

Sold in every State in  
the Union, Canada, and  
abroad.

Drinking Fountains

Blood Cans

Hoppers

Poultry Knives

Recommended and used  
by the New York  
State College of Agriculture.

All Poultry

Appliances

**Treman, King & Co.**  
 ITHACA, N. Y.

**CORNELL GASOLINE BROODER HEATER IMPROVED**  
 Showing the location of the Burner Box (under  
the floor); the Radiator (under the hover); and  
the Tank (under the peak).

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—IN THE—

*Famous Finger Lake Region*  
 Of New York State

**TOMPKINS, TIOGA, SENECA and CORTLAND  
 COUNTIES**

Being a Member of The Farm Brokers' Association State of New  
 York, which has for its motto—

*"A Square Deal for Buyer and Seller"*

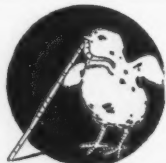
**"You're Safe in Our Hands"**

## Ithaca Realty Company

202 North Tioga Street

Ithaca, N. Y.





## H-O POULTRY FEEDS

**S**END for a sample of the feed that interests you most—and a circular that describes these poultry feeds. We want you to know why H-O Poultry Feeds make your chicks live to grow healthy and become *good producers*.

### H-O Poultry Feeds include:

H-O Steam-Cooked Chick Feed  
H-O Chick Feed  
H-O Intermediate Scratching Feed  
H-O Scratching Feed  
H-O Poultry Feed  
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Your dealer can supply you—if not, write to either address below for sample and prices:

THE H-O COMPANY  
MILLS  
BUFFALO, N. Y.

J. J. CAMPBELL  
GEN. SALES AGENT  
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OF THE

Trade Mark Registered



BRAND OF

## BEEF CRACKLINGS

is due to its WHOLESOMENESS  
and DIGESTIBILITY

THE FLAVELL CO.

ASBURY PARK, N. J.

## Former Student Notes

(Continued from page 428)

structor in farm management at the Massachusetts College of Agriculture, at Amherst.

'13, B. S.—W. C. Stokoe is teaching agriculture at Towanda.

'13, Sp.—T. J. Marshall is doing cost accounting work for the Funck Brothers Farm Company, where a specialty of growing seed corn is made. His address is McLane, Illinois.

'14, B. S.—T. W. Wardle has recently purchased a farm of one hundred and seventy acres near West Cocksackie. Since Mr. Wardle has taken possession of this farm, which has orchards containing 1200 bearing trees, he has sold 350 barrels of pears and apples and 600 baskets of plums.

'14, B. S.—Andrew Van Benschoten is running his father's farm at Margaretville.

'14, B. S.—The engagement of A. B. Dann, instructor in the Department of Poultry Husbandry, to Miss Maude Muriel Keys, of Elmira, has been announced.

'14, B. S.—Charles Thornell is farming with his father at Batavia.

'14, M. S. A.—L. F. Giesecker is in charge of soil investigations in the Montana State College at Bozeman.

'14, B. S.—Alexander Lurie is head of the Department of Floriculture in the Maine College of Agriculture.

'14, B. S.—M. F. Carr, of West Lebanon, New Hampshire, is supervising records for the Animal Husbandry Department of the State.

'14, B. S.—Sarah A. Nicholson is teaching chemistry in the Skidmore School of Arts at Saratoga Springs.

'14, Sp.—H. C. Ballard is lime agent for the Solvay Company, of Syracuse.

In writing to advertisers please mention The Cornell Countryman

## The Dryden Road Cafeteria

INCORPORATED

We invite all Junior or Farmers' Week guests to visit our place of business and inspect our kitchens with their up-to-date appliances.

After the evening lectures and entertainments, you will enjoy a lunch in our cozy and attractive dining rooms.

### Music - Magazines - Dancing

We send greetings to the new students

#### Hours of Service

	WEEK DAYS		SUNDAY
Breakfast	7:15 - 8:45		
Dinner	12:00 - 1:45	12:00 - 2:00	
Supper	5:30 - 6:45	5:30 - 6:45	
Night Lunch	6:45 - 12:30	6:45 - 12:30	

209-211 DRYDEN ROAD

ITHACA, N. Y.

## A Cow Kicked Over a Lantern Result: The Chicago Fire

Don't risk the destruction of your home and barns. Protect your family from the danger of fire that is always present where oil lamps and lanterns are used

### THERE IS SAFETY IN Farm Electric Light Plants

One of these Electric Light Plants will not only light your house, barns and yard but will also furnish power for fans and washing machines, cream separators, feed cutters, etc. The gasoline engine which drives the dynamo can also be used for pumping water, and other purposes. The lighting plants are so simple a boy can operate them with absolute safety.

Drop us a card to-day for catalog and full particulars

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# RECORDS

Double-Disc

EVERYBODY joins in when the Columbia Grafonola plays the big song hits of the day. But the latest "hits," *first* recorded and *best* recorded on Columbia Double-Disc Records, are only an indication, a temptation, a foretaste of the life, the fun, the sentiment, the classic beauty offered in the complete catalogue of Columbia Records, free on request at your dealer's.

New Columbia Records on sale the 20th of every month.

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Columbia Grafonola 110—  
Price \$110

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We have over 30 exclusive campus pictures finished in Sepia and Hand Colored.

18 for 25c

See our WINDOW 403 College Ave.

### JEWELRY

Spoons, Seals, Brooches, Fobs, Hat Pins, Rings.

### CALENDARS

We have only a few of the Hand Colored Calendars left.

CORNELL BOOK of views just the thing to take home for a souvenir.

STUDENT SUPPLY STORE

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## Make the Clinton House Your Home

Until You Get Settled, and Then Make It Your Place for Relaxation, for Good Food and Good Service After You Get Located on "The Hill."

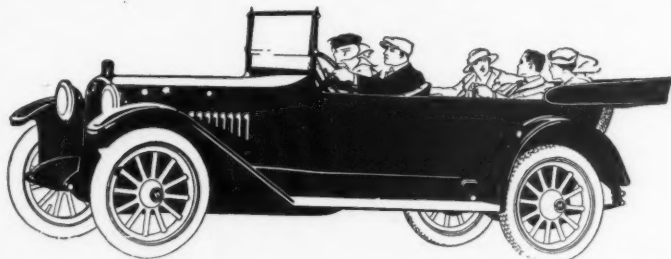
"We treat you right not once but always."

A la Carte Service 6 A. M. to Midnight

When the boarding house fare gets monotonous, try our Sunday table d'hôte dinner served from 12 to 8 at 75 cents. Week days from 6 to 8 at 75 cents.

If you have to come down town at noon, come in and try our fifty-cent luncheon.

The Clinton House



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Fireproof Garage—Machine Shop—Paint Shop  
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Dealers in AUTOMOBILES, GAS and OIL ENGINES

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BEST EQUIPPED REPAIR SHOP IN CENTRAL NEW YORK

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W. H. MORRISON, '90

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At Herald Square, the radial center of transportation to all parts of the City. One block from Pennsylvania Station, a few minutes from Grand Central Terminal. Subway, Surface and Elevated Service direct to the Hotel, which is in the midst of the fashionable theatre and shopping districts.



## *Headquarters for College Men*

Rooms - - \$1.50 per day and up

With bath - - \$2.00 per day and up

New popular price restaurant in the famous Palm Garden, one of the most attractive rooms in New York City, and easily reached because of our central location. You will find it a delightful place to entertain your friends.

Imperial Home Dinner served daily from 6 to 8:30 P. M.

**\$1.00 per cover**

Dancing every afternoon, Sunday excepted from 4 to 7 P. M.

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Tests for the past three years at the Cornell Experiment Station have shown this bean to be remarkably resistant to anthracnose.

If you are interested in a bean that will stand up against the blight anywhere and everywhere and make up a crop of good, clean beans, write for particulars to

**John C. Wells**  
Shortsville N. Y.

### Scrupulous Cleanliness

constant sterilizing of all receptacles and machinery, incessant care in every step from the cow to your table, together with perfect pasteurization make Sanitary Ice Cream and Milk Co. products absolutely safe for the whole family, from the baby up. Let us add your name to our rapidly growing list of satisfied customers. It costs no more to receive this protection.

We invite your inspection at any time.

**SANITARY ICE CREAM and  
MILK CO., Inc.**

701 W. State St. Both Phones



## Hotel Rochester

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**300 ROOMS**  
**All with Bath**

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ONE COME HERE



### *Student Barber Shop*

F. M. TIBBITTS, '16  
401 Eddy Street  
Opposite Buffalo Street

*Razors Honed 25 cents*

## CALKINS & TICKNER

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## The Tompkins County National Bank

ON STATE STREET



The Finest Banking  
Building in  
Central New York

We Solicit  
Student Accounts

RESOURCES OVER ONE MILLION DOLLARS

Where you saw it will help you, them and us

P	ure Milk and Cream.
E	very department under my personal supervision.
A	lways ready to fill orders.
R	egular and careful delivery.
S	ystematic inspection of dairies.
O	ur equipment is modern and adequate.
N	ow, let us serve You.

**The Pearson Sanitary Dairy**

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NEW MODEL 8

L. C. SMITH & BROS.  
TYPEWRITER

**The most silent running, efficient typewriter  
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**This new model 8 comes nearer to being an  
absolutely silent machine than any ever produced--  
without sacrificing essential features--reducing the ele-  
ment of noise to a minimum.**

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HANDLING THE BEST IN THE CITY

Special Prices to Fraternities

Quality and Service Unexcelled

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When wanting Quality, Service and Cleanliness

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- Feb. 12—Oberlin, at Ithaca  
 " 16—Carnegie Technical College, at Ithaca  
 " 19—Cornell, at Yale  
 " 21—Cornell, at Dartmouth  
 " 25—Cornell, at Columbia  
 " 26—Cornell, at West Point  
 Mar. 3—Columbia, at Ithaca  
 " 29—Dartmouth, at Ithaca  
 " 6—Penn, at Ithaca  
 " 9—Princeton, at Ithaca



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## Hair Shampooed

or a good

## Corset Fitted

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CORSET SHOP

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*Our specialty is  
Maternity Corsets*

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SIGN  
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By that WE mean:

Work done correctly,  
Rates that are right,  
Promptness,  
Eight Students.

Does your Laundry Bag bear  
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If not just call, Bell 676, Ithaca 630.

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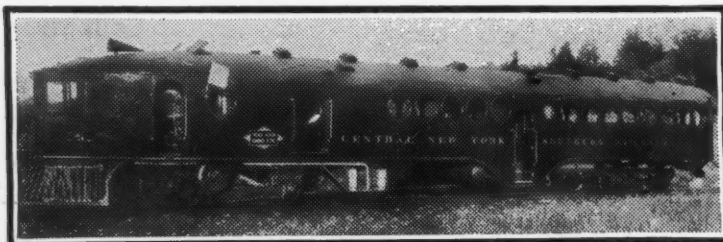
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All new men should know that we serve  
CHOICE FOOD at Reasonable Prices

Pleasant Surroundings  
FINE QUALITY

JOSEPH LISSECK

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THE New Cochran is just a short walk from the White House, Department Buildings, Churches, Theatres, Hotels and Shopping district.

The Hotel New Cochran combines all the comforts of home with the added luxuries of an up-to-date hotel.

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Room without bath, 1 person, \$1.50 up  
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Manager

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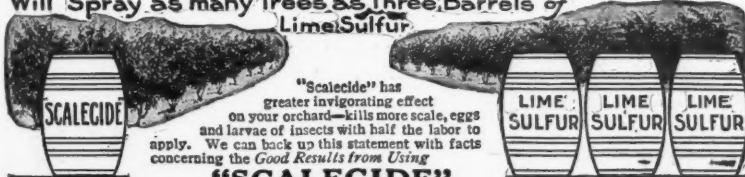
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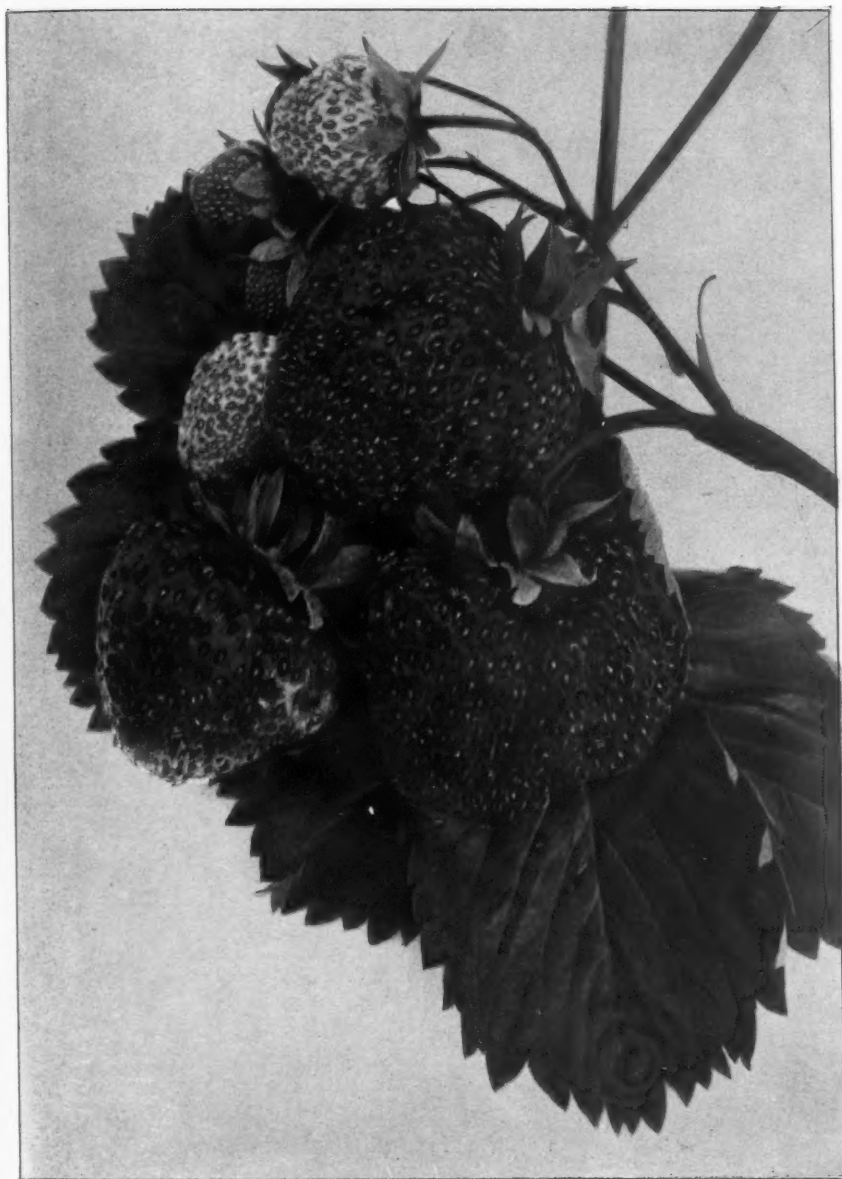
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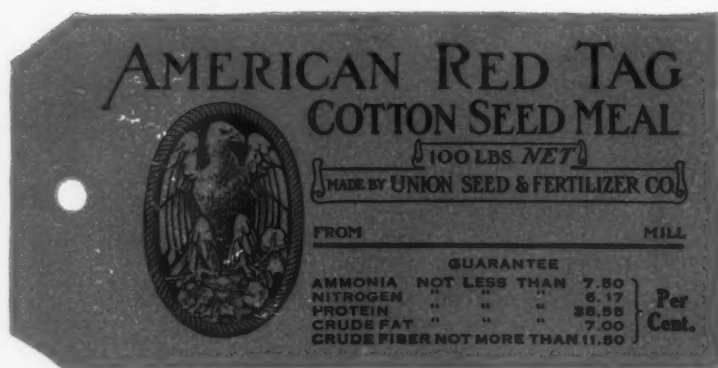
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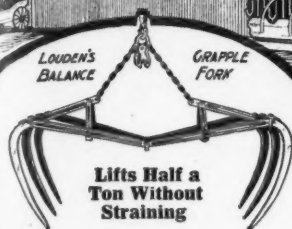
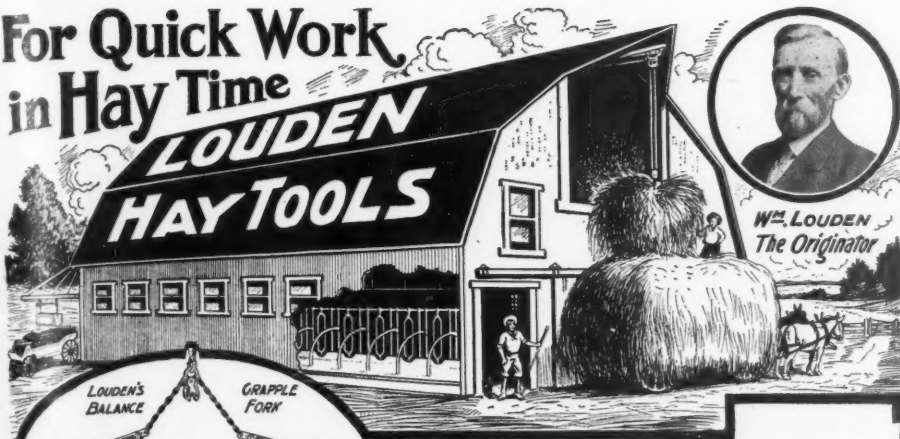
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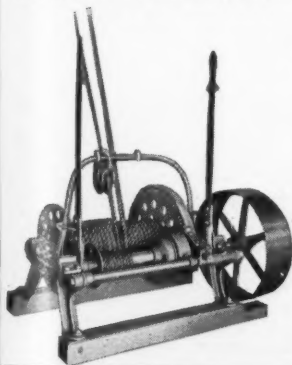
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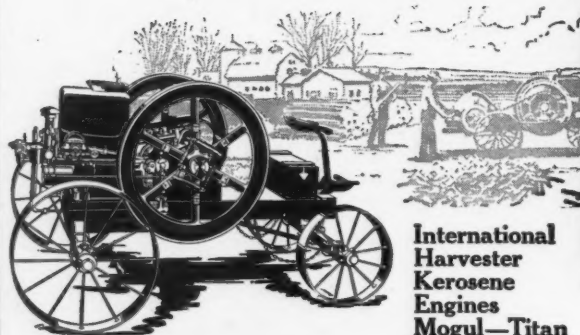
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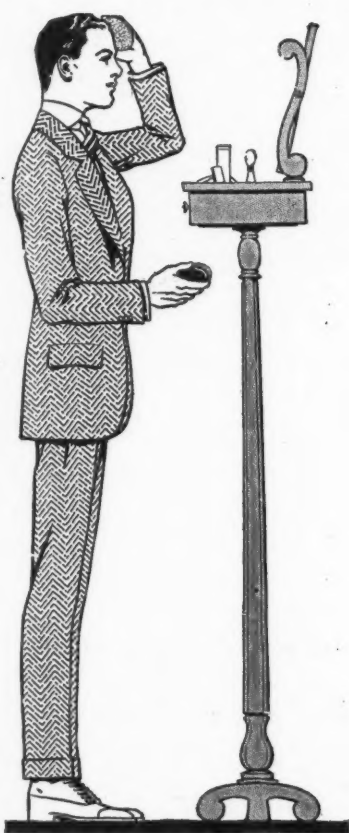
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